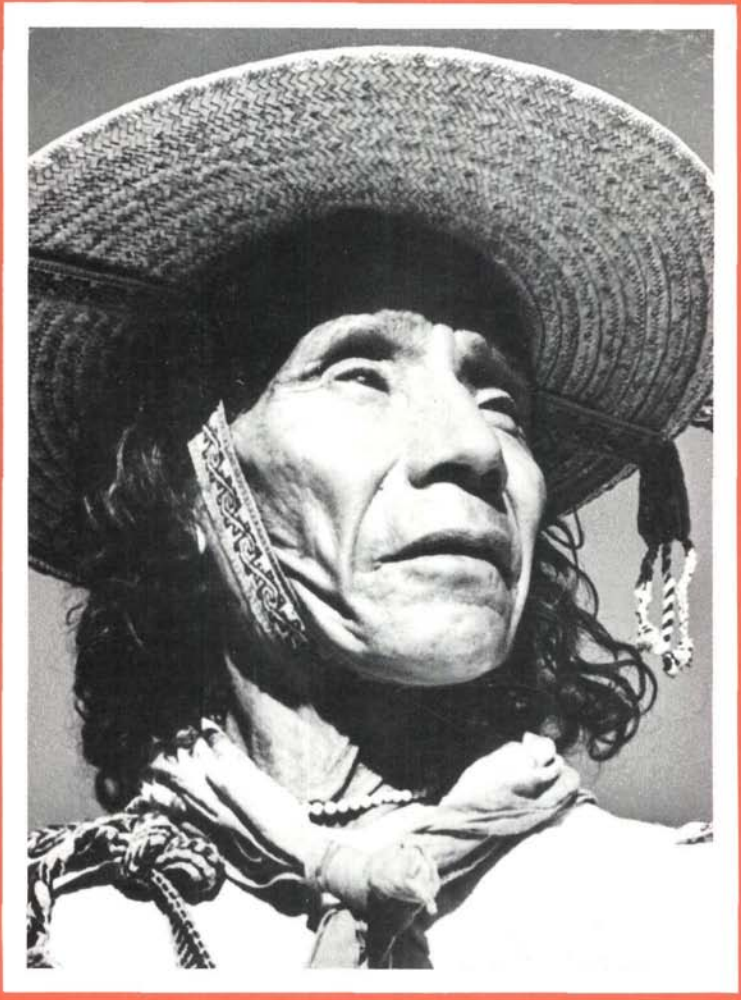
THE MANKIND QUARTERLY



VOL. XXXIII, No. 3 Spring 1993

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Leading the field in sociology and the related social sciences:

sociological abstracts (sa)

and

Social Planning / Policy & Development Abstracts (SOPODA)

Our subject specialists track the broad spectrum of theoretical and applied sociology from the more than 1,800 discipline-specific and related journals published in North America, Europe, Asia, Africa, Australia, and South America.

sa and **SOPODA** each offer you in-depth abstracts and precise indexing of timely journal articles and books, enhanced dissertation listings, and a bibliography of book reviews from the journals screened.

sa and **SOPODA** are available together on the **sociofile** CD-ROM and are hosted online by BRS, DATA-STAR, DIALOG, and DIMDI. Hardcopy subscriptions can be ordered from the address below.

The **sa** and **SOPODA** information products are supported by:

- Database-specific user manuals
- The latest journal coverage list
- The **sociofile** Quick Reference Guide and User's Handbook
- The **Thesaurus of Sociological Indexing Terms**
- Your Guide to Searching **sa** using a Personal Computer
- A professional workshop program

The **sa** family of databases — your fast track to the information you need, in the format you want.

sociological abstracts, inc.

p.o. box 22206 • san diego, ca 92192-0206
phone (619) 695-8803 / FAX (619) 695-0416 / Help Desk (800) 752-3945

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

VOL. XXXIII, No. 3 Spring 1993

THE MANKIND QUARTERLY

EDITORIAL COMMITTEE

BRUNETTO CHIARELLI (Florence, Italy)
HANS W. JÜRGENS (Kiel, Germany)
RICHARD LYNN (Coleraine, Northern Ireland)
EDGAR C. POLOMÉ (Austin, Texas)

EDITORIAL ADVISORY BOARD

Peter Boev, Sofia, Bulgaria; Raymond B. Cattell, Honolulu, Hawaii; Tadeusz Dzierżykray-Rogalski, Warsaw, Poland; J. Balslev Jorgensen, Copenhagen, Denmark; David de Laubenfels, Syracuse, New York; Jacques Macquet, Los Angeles, California; T.L. Markey, Ann Arbor, Michigan; Umberto Melotti, Pavia, Italy; Clyde E. Noble, Athens, Georgia; Jens Palsson, Reykjavik, Iceland; Ralph M. Rowlett, Columbia, Missouri; R.J. Rummel, Manoa, Hawaii; Noel W. Smith, State University of New York at Plattsburg; Frederick J. Streng, Dallas, Texas; Charles C. Susanne, Brussels, Belgium; Daniel R. Vining, Philadelphia, Pennsylvania; Volkmar Weiss, Leipzig, Germany

FOUNDER AND FORMER EDITOR-IN-CHIEF
Robert Gayre (Edinburgh, Scotland)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Vol. XXXIII, No. 3 Spring 1993

CONTENTS

A Nongenetic Approach to Language and Language Origins
By F.J. Irsigler 243

Power and Limits of the Genetic Classification of Languages
By Alberto Nocentini 265

Orthoselection and the Corticalization of Social Behavior
By Seymour W. Itzkoff 263

An Examination of Lynn's Evolutionary Account of Racial Differences in Intelligence
By Maria T. Phelps 295

Racial Quotas in Public School Classrooms
By Ralph Scott 309

Greek Alliterative Metrics and the Writing System of the Phaistos Disc
By Edgar Bowden 321

Book Reviews 359

Cover Picture: Central American Indian (See article: *An Examination of Lynn's Evolutionary Account of Racial Differences in Intelligence*).

The Mankind Quarterly is published by The Institute for the Study of Man, 6861 Elm St., Suite 4-H, McLean, VA 22101, U.S.A. [Tel: (703) 442-8010 – Fax: (703) 847-9524]. The price of subscriptions is $20.00 per annum for students, $32.50 for private individuals, and $70 per annum for libraries, institutions and other corporate bodies. Special reduced three-year subscription rates are available at a cost of $90 to individuals (12 issues) and $200 for libraries and other corporate bodies (12 issues). MasterCard & Visa accepted.

Copyright 1993 by The Institute for the Study of Man ISSN 0025-2344

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A Nongenetic Approach to Language and Language Origins

F. J. Irsigler
Paardekraal Hospital, Krugersdorp, Traansvaal

Glossogenesis is marked by two heterochronic stages intervening in the dynamic relationship between phylogeny and ontogeny, here called "Jacobian morphism." Hemispheric dominance which characterizes the neocortical stage is of recent (Upper Pleistocene) origin as suggested by the "Neocorticalisation Indices." The African Negro infant's psycho-somatic precocity which includes acquisition of language, is viewed as accelerated recapitulation, Haeckel's original model. Language and consciousness are discussed as affective-cognitive "forms" (*thesei*) resulting from sequential dissociation along the phylogenetic and ontogenetic time scales of Jacobian morphism. The hypothetical "linguistic paedomorphism" refers to the modern child's tempo of learning the native language.

I. Introduction: Heterochrony.

> "New characters may appear at all stages of ontogeny, and by heterochrony they may be retarded or accelerated, so as to appear later or earlier in subsequent ontogenies."
> *G. R. Beer (1930)*

The mammalian neocortex originates from the reptilian palaeocortex and, beginning with the jurassic mammal-like reptiles, form the limbic (palaeomammalian) archicortex. Both form the "allocortex sensu lato" (Stephan and Andy). In the higher mammals, the latter forms a zone of interpenetration (L. Edinger) or interdigitation (Braak), resulting from "migratory processes" (Schepers) which characterize the earliest stages of brain evolution in phylogeny and ontogeny. The transitional zones, called "periallocortex," play a key role in the successive stages of interdigitation between the allocortex (reptilian) and isocortex (mammalian) laminae. Displacements in time of onset and rate of development

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

are known since Haeckel (1866) as "heterochrony." They are group-specific and correspond to distinct stages in (tel) encephalisation.

In modern times, heterochronic shifts were brought into the foreground of discussion regarding the origin of species, Darwin's original concern. The palaeontologists explained the "gaps" in the fossil record by sudden events, meaning the emergence of new forms, subspecies or "morphs." These "explosive" phases intervene in the gradual or phyletic continuum of the traditional type. Schindewolf's theory of space-time relationship between ontogeny and phylogeny, called "proterogenesis," holds that new evolutionary features were introduced suddenly into ancestral juvenile stages to appear in the adult descendant (Gould). This makes phylogeny a function of ontogeny (Sewertzoff) and reveals the heterochronic events as coincident with heteromorph speciation (Groves).

The so-called "nomogenetic school of evolution by law" (Gk. *nomos*, law) has its name from the Russian evolutionist L. Berg (1922, translated in 1969). It was developed in the West by Garstang (1928, de Beer 1930, J. C. Willis 1940, and Groves 1989). The main tenets are: (1) Evolution proceeds not by slow continuous changes but by jumps, meaning sharply distinct changes; (2) changes come about by regular, but non-adaptive, space-time dislocations between phylogeny and ontogeny, called "epigenetic deflections" (S. Lovtrup, 1974); (3) nomogenesis is stenotopic and demic, facilitating patchy distribution, team production and team selection ("the group spirit").

II. **The Temporal Area**:

> "The genetic text has sense only for those structures determined by itself. Thus, there is no 'cause' any more for reproduction, only a cycle of events where each constituent plays its role solely as a function of the other constituents... Thus, again, a univocal relation has been established between two systems of symbols: one in order to preserve the information from one generation to the next, the other to unfold the structures at each generation." *J. Jacob, "La Logique du vivant," 1970*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

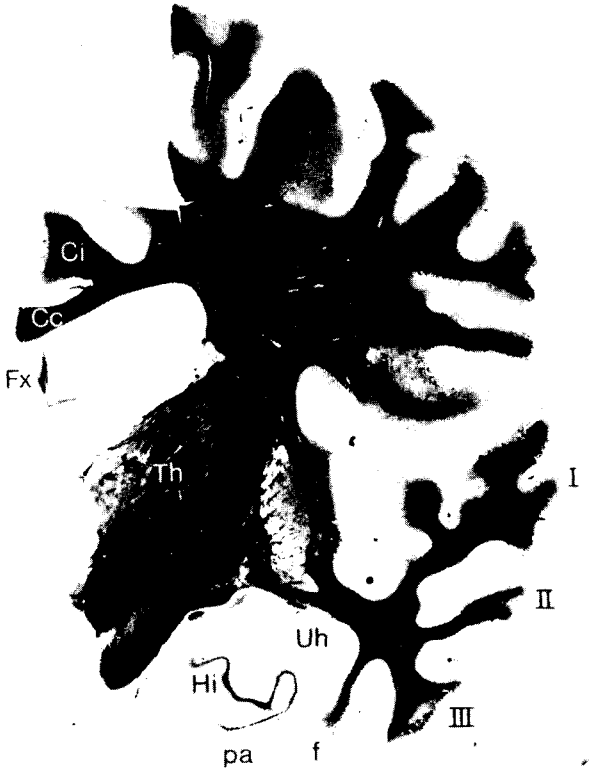


Figure 1. Frontal section through the right hemisphere of a patient with Pick's dementia. Dark color indicates normal white matter underlying a greyish (=normal) cortex. Typical involvement of the fronto-temporal forebrain, including the hippocampus Hi, the regio entohinalis pa, and the fusiform-hippocampal gyrus f.

Heidenhain-Woelcke myelin stain. Note thinning (=atrophy) of the cortex covering the named parts and the middle (II) and inferior (III) temporal gyri; the latter's white matter is discolored (light color) indicating demyelination, covered by atrophied cortical layer. The superior temporal gyrus I is spared.
Uh, temporal horn of the lateral ventricle (dilated). Th, thalamus; Fx, fornix; Cc, corpus collosum; Ci, gyrus cinguli (all unaffected). (From Jakob, H., "Die Picksche Krankeit" (1979). By kind permission from Dr. H. Jakob, Wiesloch, and Springer-Verlag, Berlin).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The temporal area is crucial in heterochrony, hence the hominization.

II.1. It is the scene of the early "migratory processes" mentioned. They are: (a) shrinkage of the palaeocortex and infolding of the archicortex (Gegenbaur, Spatz, Hyman). It goes hand in hand with a complementary expansion of the neocortex, evidenced by the rhinal (palaeo-neocortical) fissure which "migrates" from the convexity to the infratemporal plain in lower mammals; (b) hemispheric rotation around the sylvian (lateral) fossa with opercularization of the insula Reilii which remains exposed in the mediterranean Neanderthals (M.-A. de Lumley) and into the second half of human pregnancy (Spatz). Heterochronic displacements occur in both the phylogenetic and ontogenetic dimensions of alloneoecortical interdigitation, hence called "Jacobian morphism."

II.2 The temporal area is the "classical" site of systemic cortical atrophy known as "Pick's presenile dementia," a condition which, during a protracted and fatal course, destroys the core of human character and personality. The pioneering work of H. Spatz (1937) and his followers (Lüers, Lüers and Spatz, Jakob) has provided evidence that the phylogenetically early, allocortical avenues to and connecting paths between the olfactory and limbic (palaeo-mammalian) systems are in the Pick-type dementia the sites of predilection showing laminar progressing decortication and demyelination of the subcortical white matter (Fig. 1). These regions include the late-myelinized infratemporal sector of Flechsig, and coincide largely with the "basolateral limbic circle" of Livingston and Escobar, and the orbito-insulotemporal polar region of Kaada (Jakob, 1979). It is shown in Fig. 2. Language impairment runs from an initial amnestic stage to complete "aphasic dementia."

II.3 The cerebral sylvian angle of Kappers and Weidenreich, that is the angle between the axis of the sylvian fossa and the horizontal, demonstrates an encephalic flexural trend at work in the evolution of the hominid brain. It has been called "an infallible index of the humanity of a particular brain." (Schepers, 1949; T. Edinger, 1975). It decreases from the gorilla through Australopithicoid to modern man, and is a quantitative measure of hemi-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

spheric rotation and insular opercularization mentioned under II.1 (b).

II.4 In his description of Rhodesian (formerly "Broken Hill," now "Kabwe") endocranial cast, G. Elliot Smith (1928) notes the exceptionally slight development of the vertical direction of the temporal area compared to its great width. According to Smith, the parts of the brain which reveal the most striking contrast in size when the human brain is compared with the anthropoid ape, are those which reveal the most striking deficiencies in the Rhodesian cast, and the same areas attain their full maturity latest in the process of development of the brain in the modern human child. This observation suggests that the ratio of the infratemporal base ("width") to the convexity ("height") of the temporal area can be taken as a measure of the latest stages of anthropogenesis.

II.5 Last, it has been found that the temporal speech area (the planum temporale) is in 65% of human brains bigger on the left (dominant) side compared to the right or minor hemisphere (Geschwind and Levitsky, 1968).

The asymmetry has been confirmed by a quantitative method developed since 1979 in cooperation with the Institute for Biostatistics, South African Medical Research Council, and the Centre for Advanced Computing and Decision Support (Irsigler, 1983; 1991). The method takes the ratio (of the linear extension) of the infra-temporal plain (B) to that of the convexity (C) of the temporal lobe as a measure of neocorticalization, that is, in morphogenetic terms, of allo-neocortical interdigitation, or, in the language of "Evolution by Law," as a quantitative parameter of the "Jacobian morphism." It is a heuristic construct characterizing the human brain. It was called "Neocorticalisation Index NI."

III. "Neocorticalisation"

Table 1 documents two outstanding observations:

(1) there is, in both ethnicities, a clear-cut lateralisation in favour of the left (dominant) hemisphere with regard to the reptilian-palaeomammalian moiety (B);

(2) there is, in the European right (minor) hemisphere, a significant rise of the B-component (1.39) compared with the Africans

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(1.28). This is equivalent to saying that in the Africans the measured hemispheric laterality in favour of the left half of the brain is greater compared with that of the Europeans. This is to be discussed later.

		Right Hemisphere			Left Hemisphere		
Ethnicity	n	B	C	NI	B	C	NI
Indo-European	55	50	36	1.39	51	33	1.55
African Negro	46	46	36	1.28	49	32	1.53

Table 1. Hemispheric lateralisation revealed by the Neocorticalisation Indices NI which were obtained from a random sample of 1 1 adult human brains. n, number of measured brains. The linear extensions of the (reptilian-paleomammalian)infratemporal plain (B) and of the neomammalian temporal isocortex (C) are given in mm. NI B C.

Both observations have been confirmed quantitatively in all computations and by different methods carried out for the present work. Therefore, they must be considered as morphogenetic invariants characterizing the modern sapiens brain.

In the present work measurements were taken from the two best-preserved South African prehominid endocranial casts (Taung, Rhodesian) and from 128 modern sapiens brains. (Irsigler, 1976a,b: 1983; 1984a,b; 1986; 1990; 1991).

With regard to language origins the results are here summarized:

(1) **Taung** (*Australopithicus africanus Dart*). The exceptionally high NI-parameter (1.90) in the (only preserved) right hemisphere supports the view that this juvenile specimen represents a "peripheral isolate" (Mayr, 1966) in rapid evolution from a basically

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

gracile form of Australopithicene (Tobias, 1985).

(2) The **Rhodesian** (Kabwe, formerly Broken Hill) endocast is conspicuous for lack of left-hemispheric dominance. This confirms Smith's (1928) observation and is in line with the view that the modern man's verbal behavior is an acquisition of rather recent geological date, some 120,000 years more or less before present, coincident with the transition to the Neanderthal and modern grade (Klein, 1973; Jaynes, 1976; Partridge, 1982; Noble, 1990, 1990; Groves, 1989).

Pulleyblank's (1981) argument rests on "dual patterning," that is the capacity to form an unlimited number of meaningful morphemes from a limited number of meaningless phonemes (H rmann, 1981). This and the development of the vocal organs did not occur, according to Pulleyblank, before the Upper Palaeolithic, around 40,000 years ago. It is obvious that the period between the Kabwe and the Neanderthal hominids was crucial with respect to the origins of the spoken word (and the development of demic distribution) (Wind, 1988; Leiberman, 1988).

(3) **Ontogeny.** NI-parametrization shows a significant group difference in the infants aged three years or less. The African Negro's parameters overlap on the right and the left with those of their adults. In the community of European descent the two are almost mutually exclusive. Thus, the African baby is born with the encephalic parameters of its parents. this phenomenon of "precocity" is well known since the fifties (Geber and Dean, 1964 and 1966; Jensen, 1973; H bert, 1977). It includes psycho-somatic development, motor abilities and the acquisition of language, that is, the ability to speak the native language.

It is here regarded as heterochronic acceleration in Haeckel's original sense, in modern language called "peramorphosis" achieved by acceleration of somatic development (Groves, 1989:56). We face here a group difference involving the ontogenetic (horizontal) branch of the Jacobian morphism (section II.1). This branch is involved in favor of the allocortical high NI-parameters of the B-component.

This brings us back to Table 1.

In our sample, the mean age of the European community is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

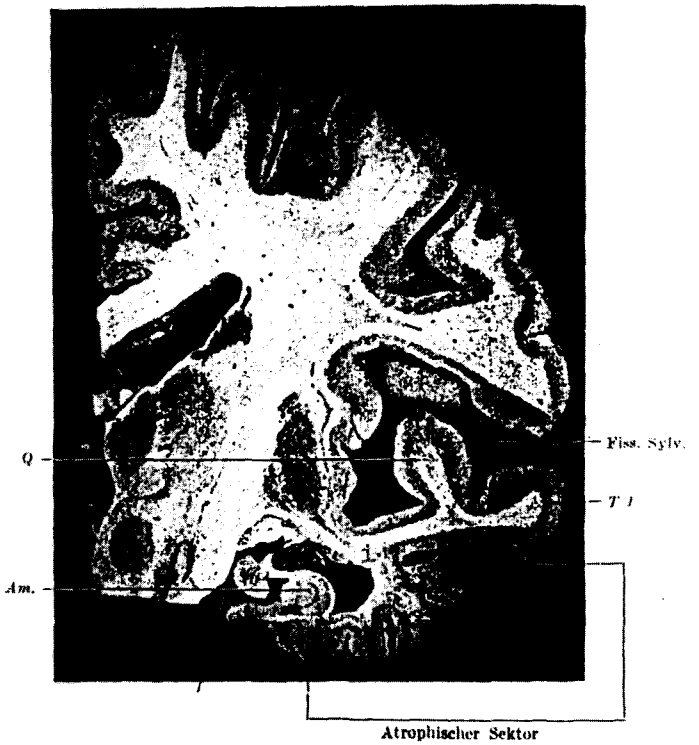


Abb. 3b. Fall von Abb. 3a auf dem Querschnitt. „Temporaler Sektortypus". 1. Querwindung (*Q*) und 1. Temporalwindung (*T 1*) einerseits und Ammonshorn (*Am.*) andererseits intakt; dazwischenliegender „Infratemporaler Sektor" ist geschrumpft.

Figure 2. Frontal section through one half of the brain of a patient who suffered and died from Pick's type of presenile dementia. Fiss.Sylv., entrance into the sylvian fossa. *Q*, Heschl's transverse convolution.

Note shrinkage of cortex and discoloration of subcortical white matter affecting the "infratemporal sector" (indicated), compare with Figure 1. Hippocampus (Am.) and superior temporal gyrus T1 are spared. According to Spatz, "the rhinencephalon and cornu Ammonis (Am.) may sometimes be severely involved." (Greenfield's 1963:549, see References).

Note, in addition, widening of the sylvian fossa and the inferior (temporal) horn of lateral ventical (i) due to atrophy of insula, basal ganglia, and orbito-frontal cortex. From: *Lüers and Spatz 1957* (see References).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

51 years, that of the African Negro community is 34 years. Correcting for the difference in ages, the Institute for Biostatistics (1983, 1984) has found, by two different methods, that the age difference is the only distinguishing factor.

The sudden rise of the B-component in the European adult's right hemisphere appears, in the light of the Negro infant's precocity, as a new evolutionary stage, added at the end of a truncated ancestral ontogeny; it is, in the language of "Evolution by Law," "epigenetic deflection" (Lovtrup, 1974).

The stage is paedomorph in origin and consequences, meaning the juvenile adult descendant to resemble a juvenile stage of its ancestor (Gould, 1977).

IV. **Language and Consciousness**

Language is a "form" (*thesei*) or relation construed by combining words grammatically (Irsigler, Conference on the Biology of Language, Rydzyna, Poland, December 1-4, 1988). Language is more than pairing deep and surface structures through a "generative grammar," for it involves extracting meaning from the informational content of the deep structure (Lenneberg, 1967:298,-398). It is "perceived meaning" (Stent, 1975) or semantic information associated with a high "selective value," the driving force for evolution (Eigen, 1971).

Substantializing (reifying) language, that is making it a substance (the Platonic "physei") means inferring the structure of the world from an analysis of the structure (grammar) of languages (Aquinas' "adaequatio rei et intellectus," Rougier). This kind of language determinism or nominalism has made medieval "science" purely "verbal," a matter of definitions and inferences drawn from them. In modern times, it has led to the idealized "Galilean observer" (Edelman) and to the fundamental dilemma of the "objectivity postulate." (Monod).

All that has been said so far about language applies to consciousness. It, too, is a "form," a knowledge of a relation construed "nunc et ad hoc" in different degrees and different modes, even as "animal consciousness" (Popper and Eccles). It includes "The Affective Unconscious and the Cognitive Unconscious" involving the "cercle initial ou r el" between the subject and the object (Piaget, 1973:45; 1976:63 ff).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Language and Consciousness have in common:

(1) **group specificity**, obvious in language and apparent in the species-typical modes and degrees of consciousness mentioned. Their crucial features are, according to Sperry (1983:95), "presumably innate in each species and largely preorganized independently of sensory input";

(2) **emotionality** or "direct apprehension of shape" (Levy, Trevaarthen and Sperry, 1972), that is knowledge concerning what a thing or event means or implies (Irsigler, 1984a; Gyori, 1990). It represents the "emotional truth" (Cattell), "the most appropriate emotional response in a given species in relation to a given environmental situation." As such it is at the base of the right-hemispheric superiority in visuospatial (perceptive-cognitive) abilities (Sperry, 1983:56).

Riedl (1980) calls the group-specific mode of perception and thinking owned by the minor hemisphere "Induktion" (Erwartung).

This brings us back to the nomogenetic interpretation of the heterochronic "event" observed in the right hemisphere of the adult sapiens brain, discussed in section III.3.

In terms of Piaget's "structuralism" (1973), group-specificity is related to "affective and cognitive unconscious," a hidden (internal) mechanism which directs the subject's thinking without the subject having access to it.

This reveals at once the phylogenetic roots of "thesei" forms, and the role of the concepts of structure and information in modern evolutionary thinking which tries to link selection theory with the dynamics of irreversible processes (Glansdorff and Prigogine, 1971; Prigogine, 1977; Piaget, 1971,1973,1976; Irsigler, 1988a,b; 1990;1991).

From the point of view of heterochronic ("structural") stages, language and consciousness, as "forms" of affection and cognition, can be traced back to the time of the reorganisation of the amphibian telencephalos, that is to the time of the sauropsid/theropsid split and the emergence of secondary olfactory and secondary associative systems. (Northcutt, 1967, Stephan, 1975)

This brings us to a discussion of the heterochronic stages of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

glossogenesis.

V. **Glossogenesis by Law**

Two heterochronic shifts are distinguishable, acceleration at the palaeomammalian (limbic) level, and retardation (neoteny) at the human (neocortical) level.

V.1. Allometric volume comparisons show in the ascending primates, from the prosimians upwards, a clear-cut reduction of the palaeocortical (olfactory) centers. In contrast, the palaeomammalian regions, especially the entorhinal (parahippocampal) allocortex (coinciding with Brodmann's 28, 34 and 35) undergo a unique increase in size and an extensive architectural differentiation into a series of well-defined subareas. The entorhinalis is an associative link between the hippocampus and the isocortex (Braak), both culminating in man with regard to cyto-mylogenetic patterning (Stephan, 1975, 1983, 1980, 1987; Stephan and Andy, 1970).

The heterochronic event at the palaeomammalian(limbic) level is a milestone in the evolution from mammal-like reptiles to man.

The so-called "reptilian driver" is represented in mammals by a cholinergic string of neurons present in animals ranging from reptiles to man (MacLean, 1978:42). It coincides largely with the limbic system and includes the olfacto-striate-pallidal complex, representing the so-called "paracrine information circulante" (Laborit, 1974; Nieuwenhuys, 1985). In terms of saltatory cladogenesis the limbic "leap" brings to mind the possibility, discussed by Tobias (1971:133) as a "feedback" mechanism, that humanizing tendencies could have occurred several times in the history of Primates, as suggested by the transition from the visual and gestural to auditory communication on the one hand, tool use and team hunting on the other, the latter being related to the habilis /erectus transition (Muller, 1990; Noble, 1990).

A repeated event of a similar kind may have been a split of the hominid lineage late in the Pliocene times some two million years ago, as suggested by Tobias (1985:132).

The crucial position of the limbic level in hominization is corroborated by phylogenetical and ontogenetic evidence. Vocalization at the limbic level like the primate call-system and the "exclam-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

atory system" of (neonatal) baby cries in pain, hunger or pleasure are an "innate," genetically based, involuntary expression of emotion, semantically structured and socially conditioned. They are dependent on the closed loop, self-referring stimulus-response circuitry which characterizes the limbic system. Semantic signals are a factor in group cohesion, social identity, and in the mother-infant relationship indispensable for the development of the human being as a social animal (Aristotle's "zoon politikon"). (MacLean, 1952, 1958; Pribram, 1971; Campbell, 1974; Laughlin Jr., 1974; Ploog, 1980 a,b).

This brings us back to group specificity and emotionality, discussed in section IV, inherent in language and consciousness, the two heterochronic "forms" of the phylogeny/ontogeny morphism, the central theme of the present work.

V.2 Human (neocortical) retardation (neoteny).

It contrasts with the limbic (palaeomammalian) acceleration. Involved are the fronto-temporal neocortex (Spatz' "basal Rinde", Kahle's "basal neocortex"), that is the orbito-frontal cortex (Brodmann's 11 and 47), including the frontal pole (10) and Broca's centre (44+45), and the infratemporal sector of Flechsig (Brodmann's 21 and 20) between ammonshorn (hippocampus) and superior temporal gyrus T_1 (Fig. 1). These cortices attain latest cyto-and myelogenetic maturity (C. & O. Vogt, 1919; Flechsig, 1920; Spatz, 1949,1955; Kahle 1969), and are the chief targets of cortical atrophy in Pick's disease as discussed in section II.2 (Fig. 2). In the human species, these cortices undergo an ontogenetic maturation gradient (Kahle's "Reifungsgefalle") which runs counter to the phylogenetic time scale and Haeckel's biogenetic rule (Sanides, 1975).

It is at the neocortical, human level, where the sapiens brain exhibits a unique sequence dislocation, that is a heterochronic retardation, the mirror to the acceleration of the Negro infant's precocity which was discussed in section III.3.

VI. **Linguistic Paedomorphosis**

The historical linguist Bernard H. Bichakjian has developed, in a number of papers, a theory of linguistic paedomorphosis. He calls the sequence of changes undergone by language with the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

passing of time, "language evolution." In the anthropologist's terminology, language evolution means what Bichakjian calls (I feel somewhat equivocally) "acquisition of speech by our species," synonymous with the linguist's "language genesis" (Bichakjian, 1988 1:127,130). Psycho-linguistic data show that Indo-European languages, and putatively all languages, evolve in the one direction of "earlier-acquired features," meaning "in a paedomorphic direction." This applies inherently to all areas of language and is interpreted as temporal retardation of development, formerly called "foetalisation," and now referred to as "paedomorphosis" or "neoteny" (Bichakjian, 1988b: 121,131). It is traced to the retardatory action of our regulatory genes, according to Bichakjian (1988a, 121, 131).

The first thing to be noticed here is that paedomorphosis and neoteny are taken as being synonymous with "foetalisation." It is now generally thought, mainly due to S. J. Gould's essay of 1977, that retardation of somatic development (= neoteny) and truncated growth through accelerated reproduction (= progenesis), though distinct, may both result in paedomorphosis (Groves, 1989:57); the latter is the more general term.

Furthermore, paedomorphosis does not disprove or exclude Haeckel's model of recapitulation. The two arise from processes intervening at different times of onset and distinct rates in the ontogenetic/phylogenetic sequence dislocation, called "heterochrony."

Let me illustrate by a classical example.

The South African Kalahari Bushmen or San people, numbering about 60,000, are known for their juvenile features and other bodily traits misinterpreted for a long time as adaptations to their desert habitat. However, Tobias (1978) points out that the ancestors of the San looked like the "desert Bushman" of today long before their descendants became exclusive desert dwellers. Their distinctive bodily traits are described as paedomorphic meaning "the tendency to retain into adulthood features which in other populations or species are regarded as those of immature stages of development." Their paedomorphosis defines the San as a distinct ethnic or racial entity (Tobias, 1979:3,5). It follows from this that:

(1) paedomorphosis is not necessarily an effect of adaption to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the environment,

(2) it is a character of ethnic or racial specificity.

As a physical anthropologist, not competent in assessing linguistic data, I offer the following comments with regard to Bichakjian's "linguistic paedomorphosis."

First, there is some discrepancy in the definition. In linguistic terms, paedomorphosis means changes in the direction of features which are "earlier-acquired" (or "mastered") by the modern child (Gk. *paidos*) learning his/her native language, that is learning to speak (Bichakjian, 1988b:17). The yardstick here is the ontogenetic time scale of the growing child.

In assessing linguistic data, it turns out that items late acquired by the ancestors, e.g., temporal distinctions, become the "earlier-acquired" ones in the descendant child. In phylogeny, the aspectual distinctions appear before the temporal ones, the modern child masters first the tenses (Bichakjian, 1988b:17,26). Tense is a "newcomer" in Indo-European languages.

There may be few objections to calling this "foetalisation" or something of a reversal of paedomorphosis in heterochronic terms, i.e. an adult descendant resembling his juvenile ancestor. In linguistic terminology, "paedomorphosis" refers to the modern child's ontogenetic development which is different from his ancestor's acquisition of speech, i.e., "language genesis."

Moreover paedomorphosis does not stand or fall with the Synthetic Theory of Evolution (Bichakjian, 1988a:145). Bichakjian calls linguistic paedomorphosis a "pervasive adaptive phenomenon" due to slower gene expression in our species. This implies identification of genetic processes and selective powers (ibid,:14), meaning that linguistic and biological processes, having moved in the same direction, emanate from a "common efficient cause of retarded development" (ibid.:33). This argument can be challenged. In spite of genetic effects on behavior, there is non-congruence of the two levels of description (Fuller and Thompson, 1967). Comparing genetic (molecular) and behavioral estimates of distance between humans and chimpanzees, King and Wilson (1975) developed the concept of "Evolution at Two Levels."

Finally, Bichakjian rejects (1988b:18) Haeckel's "ill-founded recaptulationist theory as a long abandoned myth." This is a mistake, as here shown earlier, and as attested by evolutionists

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

from Garstang (1922) to Gould (1977:206,213).

On the whole, I am inclined to agree with Wind, pointing out the "weak spot" (1988a:143) in applying a descriptive term at different levels of description without changing its original meaning.

VII. **Conclusion.**

The basic idea is the dynamic (space-time) phylo/ontogenetic relationship, here called "Jacobian morphism." It goes back to Haekel and in modern times became known as "Evolution by Law." It holds: (1) Evolution proceeds by distinct heterochronic stages which may lead to heteromorph speciation; (2) it is mostly non-adaptive. Glossogenesis is rooted in two stages, both cladogenetic in origin and consequences: acceleration at the limbic (palaeo-mammalian)level, and retardation at the neocortical (human)level. A new adult phenotype is proposed on the base of morphogenetic (all-neocortical) interdigitation. The adult type of the sapiens brain is oriented towards the right (minor or "neglected") hemisphere's superiority in visuospatial or "gestaltist" group-specific perception and thinking.

Acknowledgement: I am indebted to Dr. J. Wind, Institute of Human Genetics, Amsterdam, for reading and commenting on a previous version of this paper.

REFERENCES

De Beer, G. R.
1930, *Embryology and Evolution*. Oxford University Press.

Berg, L.
1969, *Nomogenesis or evolution determined by law* (trans. J. N. Rostovsov) MIT Press, Cambridge, Mass.

Bichakjian, B. H.
1988a Neoteny and language evolution. In: *The Genesis of Language*, Marge E. Landsberg (ed.) 115-148, Mouton de Gruyter, Berlin.
1988b Language Evolution: Evidence from Historical Linguistics. In: The Origin of Human Language, B. Chiarelli (ed.). Proceedings of the NATO Advanced Study Inst. Cortona, Italy, July.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Bichakjian, B. H.
None Language at the Crossroads of Biology and Culture. Undated manuscript.
Braak, H.
1980 Architectonics of the Human Telencephalic Cortex. Springer, Berlin.
Campbell, B. G.
1974, The physical basis of language use in primates. In *Frontiers of Anthropology*, Murrey J. Leaf, (ed.) :290-307, Van Nostrand, New York.
Cattell, R. B.
1972, *A New Morality from Science: Beyondism*. Pergamon Press, New York.
Chomsky, N.
1966, *Cartesian Linguistics*, Harper and Row, New York.
Chomsky, N.
1968, *Language and Mind*. Harcourt, Brace & World, New York.
Edelman, G. M.
1989, *The Remembered Present*. Basic Books, New York.
Edinger, T.
1909, *Einführung in die Lehre vom Bau und den Verrichtungen des Nervensystems*. F.C.W. Vogel, Leipzig.
Edinger, T.
1975, Paleoneurology 1801-1966. *An Annotated Bibliography*. Springer, Berlin.
Eigen, M.
1971, Self-organization of Matter and the Evolution of Biological Macro Molecules. *Die Naturwissenshaften* 10:465-523.
Fuller, J. L. and Thompson, W. R.
1967, *Behavior Genetics*, J. Wiley, New York.
Garstang, W.
1922, The theory of recapitulation: a critical restatement of the biogenic law. J. Linn. *Soc. Zool.* 35:81-101.
Garstang, W.
1928, The morphology of the Tunicata, and its bearings on the phylogeny of the Chordata. *Quart. J. Microscop. Sci.* 72:51-187.
Geber, M. and Dean, R. F. A.
1964, Le developement psychomoteur et somatique des jeunes enfants africains en Ouganda. *Corrier de l'Unesco* 15:425-437.
Geber, M. and Dean, R. F. A
1966: Precocious dévelopement in newborn african infants. In: *Readings in infancy and childhood*. Brackbill, Y. and Thompson, G. G. (eds.) Free Press, New York.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Gegenbaur, C.
1898, *Vergleichende Anatomie der Wirbeltiere*. Engelmann, Leipzig.
Geschwind, N. and Levitsky, W.
1968, Human Brain:left-right asymmetries in temporal speech region. *Science* 161:186-187.
Glansdorff, P. and Prigogine, I
1971, *Thermodynamic Theory of Structure, Stability and Fluctuations*. Wiley Interscience, New York.
Gould, S. J.
1977, *Ontogeny and Phylogeny*. Harvard University Press, Cambridge, Mass.
Groves, C. P.
1989, *A Theory of Human and Primate Evolution*. Clarendon Press, Oxford.
Györi, G.
1990, Historical Motivation in the Linguistic Sign and Its Cognitive Origin. Revised version of a paper read at the 6th LOS meeting at Volendam, August 1-4.
Hébert, J. P.
1977, *Race and Intelligence*. Copernic, Paris.
Hörmann, H.
1971, *Psycholinguistics*. Springer, Berlin.
Hyman, L. H.
1962, *Comparative Vertebrate Anatomy*. The University of Chicago Press, Chicago, Illinois.
Irsigler, F. J.
1976a, Paleoneurological Interpretations of the Endocranial Casts of Some of the Prehominids of South Africa. IX Congrès, Union Internationale des Sciences Préhistoriques et Protohistoriques, Nice (France). Résumés des Communications II,143.
Irsigler, F. J.
1976b, Rhodesian Man and the Evolution of the Hominid Brain. The *Mankind Quarterly* 17:83-112.
Irsigler, F. J.
1983, The Role of the Temporal Lobe in Morphogenesis and Laterality of the Human Brain. *Speculations in Science and Technology* 6/5:445-453.
Irsigler, F. J.
1984a, Quantitative Morphogenesis and Lateralisation of the Human Brain. *The Mankind Quarterly* 25:3-46.
Irsigler, F. J.
1984b, Die Bedeutung des Schläfenlappens für die Morphogenese und die Lateralisation des Gehirns. *Zbl. Allg. Pathol.Anat.* 129:263-264.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Irsigler, F. J.
1986, The Island of Reil and the Rooys of Language. *The Mankind Quarterly* 27:131-159.
Irsigler, F. J.
1988a, Morphogenetic versus morphofunctional theory. *Behavior and Brain Sciences* 11:95.
Irsigler, F. J.
1988b, A Morphogenetic Theory of Language, Conference on the Biology of Language, Rydzyna, Poland, December 1-4.
Irsigler, F. J.
1990, L'Enracinement allo-neocortical du Langue. *Anthropologie* 28/1:1-11.
Irsigler, F. J.
1991, A Morphogenetic Quantitative Approach to Species-typical Behavior. J. *Hirnforsh.* 32/2:211-224.
Jacob, F.
1970, *La logique du vivant*. Gallimard, Paris.
Jacob, H.
1979, *Die Picksche Krankheit*. Springer, Berlin.
Jaynes, J.
1976, The Evolution of Language in the Late Pleistocene. *Ann. N.Y. Acad. Sciences* 280:312-325.
Jensen, A. R.
1973, *Educability and Group Differences*. London, Methuen.
Kaada, B. R.
1960, Cingulate, post-orbital, anterior insular and temporal pole cortex. Handbook of Physiology, *Neurophysiology II*, Chapter LV:1345-1372.
Kahle, W.
1969, *Die Entwicklung der menschlichen Grosshirnhemisphäre*. Springer, Berlin.
Klein, R.
1973, Geological Antiquity of the Rhodesian Man. *Nature* 244:311-312.
King, M. C. and Wilson, A. C.
1975, Evolution at Two Levels in Humans and Chimpanzees. *Science* 188:107-116.
Laborit, H.
1974, Des Bêtes et des hommes. *Agressologie* 15:93-109.
Laughlin Jr., C. D. and d'Aquili, E. G.
1974, *Biogenetic Structuralism*. Columbia University Press. New York.
Lenneberg, E. H.
1967, *Biological Foundations of Language*. Wiley, New York.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Levy, J., Trevarthen, C., and Sperry, R. W.
1972, Perception of bilateral chimeric figures following hemispheric deconnection. *Brain* 95:61-78.
Lieberman, P.
1988, Voice in the Wilderness. *The Sciences*:23-29.
Livingston, K. E. and Escobar, A.
1971, Anatomical Basis of the Limbic System Concept. *Arch.Neurol.* 24:17-21.
Lovtrup, S.
1974, *Epigenetics: a treatise on theoretical biology*. Wiley, Chichester, Sussex.
Lüers, T.
1947, Über den Verfall der Sprache bei der Pickschen Krankheit (Umschriebene Atrophie der Grosshirnrinde). *Arch.Psychiatr.* Nervenkrankh. 179:94-131.
Luers, T. and Spatz H.
1957, Picksche Krankheit. In Scholz, W. (ed.), *Nervensystem Handbuch der speziellen apthologischen Anatomie und Histologie*. Band XIII/1A:614-715.
Lumley, M. A.
1973, Anténéandertaliens it Néandertaliens du bassin méditerranéen occidental européen. Editions du laboratoire de Paléontologie humaine et de préhistoire. *Mémoire N*2, Université de Provence, Marseille.
MacLean, P. D.
1958, Some psychiatric implications of physiological studies of frontotemporal portion of limbic system (visceral brain). *Electroencephalogr.ClinNeurophysiol* 4:407-418.
MacLean, P. D.
1978a, Contrasting functions of limbic and neocortical systems of the brain and their relevance to psychophysiological aspects of medicine. *Amer.J.Med.* 25:611-626.
MacLean, P. D.
1978b, The Evolution of Three Mentalities. In: *Human Evolution*, Washburn, S. L., and McCown, E. R. (eds.). The Benjamin//Cummings Publishing Company, Menlo Park, (California):33-57.
Mayr, E.
1966, *Animal Species and Evolution*. Cambridge, Mass. The Belknap Press of Harvard University Press.
Monod, J.
1972, *Chance and Necessity*. Collins, London.
Muller, H. M.
1990, *Sprache and Evolution*. Walter de Gruyter, Berlin (1990),

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Nieuwenhuys, R.
1985, *The Chemoarchitecture of the Brain*. Springer, Berlin.
Noble, S. B.
1990, Notes from Volendam and elsewhere: One observer's view. *LOS Newsletter* No. 11:2-7;
Northcutt, R. G.
1967, Architectonic Studies of the telencephalon of Iguana iguana. *J.Comp.Neurol.* 130:109-147.
Partridge, T. C.
1982, *The chronological positions of fossil hominids of Southern Africa. L'Homo erectus et la place de l'Homme de Tautavel parmi les hominidés fossiles*: 617-675. Centre National de la Recherche Scientifique.
Piaget, J.
1971, *Biology and Knowledge*. Edinburgh University Press.
Piaget, J.
1973, *Structuralism*. Routledge and Kegan Paul, London.
Piaget. J.
1973, *Introduction à l'épistémologie génétique I, la pensée mathématique*. Presses Universitaires de France, Paris.
Piaget, J.
1976, Piaget's Theory. In: *Piaget and His School*, Inheldwr, B. and Chapman, H. H. (eds.): 11-23. Springer, Berlin.
Ploog, D.
1980a, Soziobiologie der Primaten. In: Kisker, K. P. et al. (eds.) *Psychiatrie der Gegenwart*, Bd.I/2, 2.Aufl.:380-544.
Ploog, D.
1980b, Emotion als Produkte des limbischen Systems. *Medizinische Psychologie* 8:7-19.
Popper, K. R. and Eccles, J. J.
1977, *The Self and Its Brain*. Springer International, Berlin.
Pribram, K. H.
1971, What Makes Man Human. The American Museum of Natural History (39th James Arthur Lecture on the Evolution of the Human Brain.
Prigogine, I.
1977, Time, Structure and Fluctuations. Nobel Lecture in Chemistry.
Pulleyblank, E. G.
1981, The Beginnings of Duality of Patterning in Language. Abstract of a paper prepared for the Trans-disciplinary Symposium on Glossogenetics, Paris.
Riedl, R.
1980, *Biologie der Erkenntnis*. Parey, Berlin.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Rougier, L.
1960, *La Métaphysique et le Langage*. Flammarion, Paris.

Sanides, F.
1975, Comparative Neurology of the Temporal Lobe in Primates including Man with Reference to Speech. *Brain and Language* 2:396-419.

Schepers, G. W. H.
1948, *Evolution of the Forebrain, The Fundamental Anatomy of the Telencephalon*, Maskew Miller, Cape Town.

Schepers, G. W. H.
1949, The Cerebral Sylvian Angle in the Australopithecidae. *South African Journal of Science* 46:118-123.

Schindewolf, O. H.
1950, *Der Zeitfaktor in Geologie und Paläontologie*. Schweizerbart, Stuttgart.

Sewertzoff, A. N.
1931, *Morphologische Gesetzmässigkeiten der Evolution*. Fischer, Jena.

Smith, G. E.
1928, Endocranial Cast Obtained from the Rhodesian Man and Associated Remains. W. P. Pycraft (ed.):52-58. British Museum (Natural History), London.

Spatz, H.
1937, Über die Bedeutung der basalen Rinde auf Grund von Beobachtungen bei Pickscher Krankheit und bei gedeckten Hirnverletzungen. *Z.Neurol.*158:208-232.

Spatz, H.
1949, Über Gegensätzlichkeit und Verknüpfung bei der Entwicklung von Zwischenhirn und basal Rinde. *Z.Psychiatr.* 125:166-177.

Spatz, H.
1955, Die Evolution des Menschenhirns und ihre Bedeutung für die Sonderstellung des Menschen. *Nachr.Giessener Hochschulges.* 24:52-74.

Sperry, R. W.
1983, *Science and Moral Priority*. Blackwell, Oxford.

Stent, G.
1975, Limits to the Scientific Understanding of Man. *Science* 187:10521057.

Stephan, H.
1975, Allocortex.In: W. Bergmann (ed.), *Handbuch der mikroskopischen Anatomie des Menschen* IV/9:1-988.

Stephan, H.
1980, Comparative Investigations on Hippocampus in Insectivores and Primates. *Z.mikroskanata.Forsch.*94:1025-1050.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Stephan, H.
1983, Evolutionary Trends in Limbic Structures. *Neuroscience & Biobehavioral Reviews* 7:367-374.

Stephan, H. et al.
1987, Comparison of Brain Structure Volumes in Insectivores and Primates. *VI.Paleocortical Components*. J. Hirnforsch. 28/4:463-477.

Stephan, H. and Andy, O. J.
1970, The allocortex in primates. In: Noback, C. R., W. Montagna, (eds.) The primate brain. *Advances in primatology*. Vol. 1:109-135. Appleton-Century-Crofts, New York.

Tobias, P. V.
1971, *The brain in hominid evolution*. Columbia University Press, New York and London.

Tobias, P. V.
1978, *The Bushmen.San Hunters and Herders of Southern Africa*. Human & Rousseau, Cape Town and Pretoria.

Tobias, P. V.
1985, Punctuational and Phyletic Evolution in the Hominids. In: Vrba, E.S. (ed.), Species and Speciation. *Transvaal Museum Monograph No. 4*:131-141, Pretoria.

Vogt, C. O.
1919, Allgemeinere Ergebnisse unserer Hirnforschung. *J. Psychol.-Neur.* 25:279-461.

Willis, J. C.
1940, *The Course of Evolution*. Cambridge University Press.

Wind, J.
1988a, Language evolution and paedomorphosis. In: M. E. Landsberg (ed.), The Genesis of Language:137-148. Mouton de Gruyter, Berlin.

Wind, J.
1988b, Les Néandertaliens Ont-ils Parlé? L'homme de Néandertal, Vol. 5, La Pensée, Liège:117-124.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Power and Limits of the Genetic Classification of Languages[1]

Alberto Nocentini
Department of Linguistics, University of Florence

1. Language grouping: splitters and lumpers.

In a multidisciplinary approach to a complex and thorny question, like the present one, it may happen that the colleagues of the adjacent sciences expect that linguists will yield some providential contribution. Recently, the intensive application of remote genetic comparison and the revival of monogenesis have fostered some deceptive hopes. I will not follow this trend. I think that the best service I can render is to give an unbiased report on the actual state-of-the-art in comparative linguistics.

According to a widespread practice, comparative linguists are divided into splitters and lumpers, as if they were the supporters of two opposing football teams. Splitters rely on correspondence rules in phonology, grammar and lexicon and on etymological reconstruction, and their method has a narrower range of application. On the other hand, lumpers use so called "multilateral" or "mass-comparison," based upon apparent lexical resemblances, which allows a broader range of application. The real question is not whether splitting is more suitable than lumping or vice versa, but what degree of methodological reliability and heuristic power these different operations have. Likewise, as regards monogenesis, the real question is not whether we consent or oppose ourselves to it, but whether it can be proved or disproved.

The method of the splitters had already gained a high degree of reliability in the past century, but depends on historical records: when these are lacking, the splitter is forced to leave a group of languages or even a single language in isolation. Language

[1] This paper was delivered at the Seminar on the evolution and dispersal of *Homo Sapiens*, held at Cortona (Italy), September 28 to 30, 1992.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

grouping goes on as long as correspondence rules and etymological reconstruction are possible and these are the heuristic limits of the classical comparative method.

On the other hand, lumpers give up both correspondence rules and etymological construction and rely on the evidence of a certain number of lexical resemblances. This "mass-comparison" opens the way to the discovery of larger groups and remote relationships, but what is to be considered a lexical resemblance remains unclear. Although J. Greenberg, in his revolutionary book on American languages (1987), has devoted a whole chapter to the expansion of this method[2], he gives no instructions for distinguishing the resemblances which are relevant to the comparison from borrowings, casual convergences and pure illusions. Since it does not permit making distinctions between causal and casual events, the method of mass comparison is not reliable. If Greenberg has some results, this is due to his long experience in linguistic classification and to his felicitous intuitions and, soon after his book came out, the academic world divided into supporters, who trust in him, and critics, who do not.[3]

But what is going to happen, and has really happened, when linguistic classification is handled by scholars who are devoid of such qualities or are simply unlucky? Mass comparison becomes random comparison: given two languages whatever, a list of first-sight resemblances is always available and every affiliation becomes possible. During the last meeting of the Language Origins Society, two communications on comparative linguistics were presented by professional linguists: in the first one the Amerindian group (in Greenberg's sense) has been related to the Khosian family (the languages of Bushmen and Hottentots), in the second one Maya

[2] For a detailed discussion of Greenberg's revolutionary method see Morpurgo Davies 1988; no further explanation is found in Shevoroshkin 1989, despite the title *Methods etc.*

[3] An issue of *Current Anthropology* (28[1987], No. 5) is mostly devoted to the review of Language in the Americas.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

has been compared with Old Egyptian.[4]

Maybe comparative linguistics has improved its heuristic power by reducing its methodological constraints, but the new order can be hardly distinguished from chaos.

2. **Comparing languages and populations.**

After these preliminary warnings, everybody who does not deal habitually with comparative linguistics must be very cautious in accepting the results of some most advanced and daring enterprises. This is just the case of the well-known theory that has been put forward recently by L. L. Cavalli-Sforza and his collaborators[5]. The theory can be summarized by means of the diagram drawn in Figure 1, which I will consider exclusively from its linguistic side, and it goes without saying that I will use the term "genetics" mainly with reference to the relationship among languages.

The tree-diagram is derived confidently from the book on language classification written by M. Ruhlen, a Greenberg follower (1987a), and this confidence is the first flaw of the theory. Although it must be said that Ruhlen's book is the best synthesis of the world's languages we have at presently at our disposal, the results of the classification derive from uneven sources with different degrees of reliability. A general evaluation of the tree-diagram could be properly expressed through such a statement as *the larger the grouping the lower the score*. A detailed criticism has been presented by R. Bateman and others (1990), and I will not expand on the controversy.

My own criticism will concern the tree-diagram as an interpretive model of genetic relationship. Such a model has at least two limits: it gives account of the time dimension and of language splitting, but leaves out the space dimension and language merging. If space can be indirectly represented by the expansion

---

[4] I refer to the communications *Is American related to Khosian?* by E. De Grolier and *Language Origins in the Americas* by M. LeCron Foster. Both papers were read during the 8th Meeting of the Language Origins Society (Cambridge, September 7-10, 1992).

[5] I refer in particular to Cavalli-Sforza *et al.* 1988 and to the positive comment by Ruhlen (1991a:392-397).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

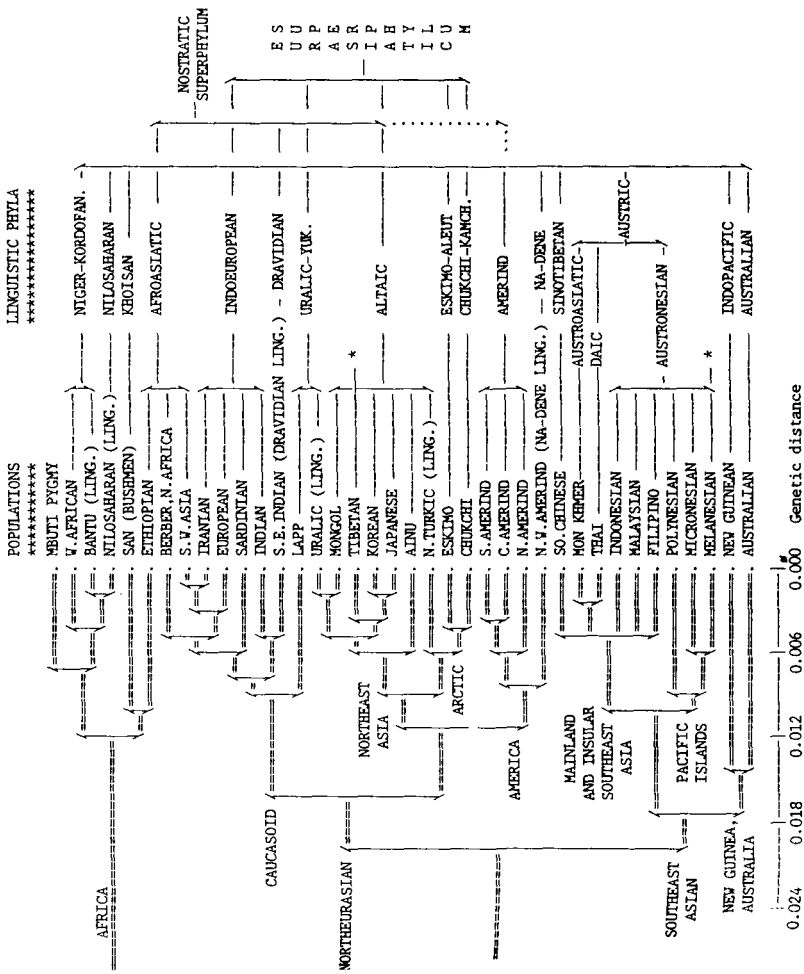


Figure 1. The arrangement of the dendrogram or tree-diagram of human populations and languages (redrawn by Bateman et al. 1990, from Cavalli-Sforza et al. 1988).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the tree, merger is just the opposite of split and the tree-diagram is particularly inadequate to represent the final stage of the merger, that is language shift, when a language is replaced by another. Language shift is so common a phenomenon that it cannot be considered simply as a noisy formulation vis-a-vis the model of the tree-diagram, and there is no reason to think that prehistory showed a different scenario in this respect.

Let us examine the question more closely.

3. **Limits of the tree-diagram as unique model of genetic relationship**.

We have to bear in mind that extant languages are the result of *selection* and not only of *germination*, and that, in many cases, they have ousted other previous languages. Of course, in the case of the unwritten languages of the New World, the problem of extinct languages is only a speculative one. But when the linguistic records go back to more than one millennium, we find scenarios that do not agree with the linear descent of the tree-diagram.

One millennium and half ago, in the 5th century A.D., Gothic was one of the most important Germanic languages, but it became extinct in a few centuries. One millennium before, in the 5th century B.C., the most widespread Indo-European family in the West was Celtic, that now is confined within small areas of bilingual speakers. Now, if we look at Figure 3, elaborated by G. Barbujani (1991) and compare it with Figure 2 from Nocentini (1983), we find that the main linguistic boundaries of contemporary Europe are coincident with its genetic boundaries, marked with continuous and dashed lines.

At first sight the fact that the linguistic map of Europe matches its genetic counterpart is encouraging. But if we consider that this current picture is the outcome of the events of the last millennium, we must conclude that the genetic structure of Europe has undergone mergers and shifts in a similar way as languages. Therefore we should not expect decisive help from genetics for the reconstruction of the pictures of previous millennia, like those we have shown above, which reflect historical and linguistic records.

In both Figures 2 and 3 the enclave of Basque is clearly visible. Basque is currently the only language isolated in Western Europe, but if we go back to the time of the first written records, about the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

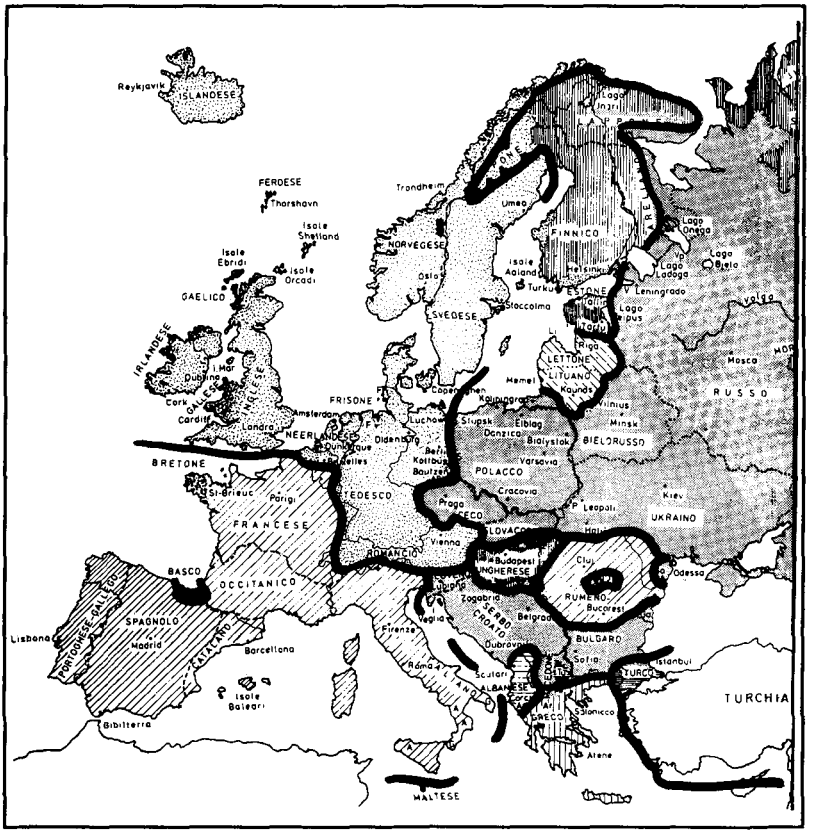


Figure 2. Linguistic families in Europe (from Nocentini 1983). In the British Isles the boundaries of the Celtic languages are not marked because they are mixed with English.

5th century B.C., we can find that every non-Indo-European language is isolate: the records collected under the labels of Iberian, Tartessian, Minean, Eteo-Cretan, Eteo-Cyprian and finally Etruscan are puzzles hard to solve and form a mosaic through the Mediterranean Sea.

If we pass to the Near East and examine the written records of the 2nd and 3rd millennia B.C., we find another mosaic. Besides Indo-European (Hittite) and Semitic (Akkadian) there remain four isolated languages: Hattie in Northern Anatolia, Hurrian in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Figure 3. Genetic and linguistic boundaries in Europe (from Barbujani 1991). See text for description.

Western Anatolia, Sumerian in Lower Mesopotamia and Elamite in Upper Persian. All these languages probably belonged to different stocks ousted by Indo-European and Semitic languages and once more presuppose cases of merger and shift instead of split.

Referring to Figure 3, the solid lines are genetic boundaries coincident with linguistic ones: Romance is separated both from Germanic and Slavonic, Balto-Finnish from Scandanavian and Russian, Romanian from Hungarian, and Ukrainian, Turkish from European. Dashed lines indicate linguistic boundaries without

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

genetic significance, and they are all cases of deep contact: Baltic is bound to Polish and Russian, Hungarian was deeply influenced by Slavonic, the languages of the Balkan peninsula (Romanian, Macedonian, Bulgarian, Albanian and Greek) form a close *Sprachbund*. Rods indicate significant genetic boundaries, corresponding to political partitions which have lasted long during European history from late Middle Ages onwards. Thus, *e.g.*, in the Iberian peninsula the reds follow the old border between Christian and Arabic kingdoms (10th-12th century), in the former Yugoslavia they run along the border between the Hungarian kingdom and Serbia (11th-14th century), in Finland they correspond to the Lapp domain in the north, while in the west they demarcate the Swedish settlement (from the 13th century onwards).

It is worthy of attention that Basque, Etruscan, Hurrian and Sumerian are listed by Ruhlen among the tiny class of "language isolates" (only nine languages in the whole world). Hattie is not recorded at all by Ruhlen and Elamite is related to the Dravidian family, according to the disputed hypothesis of D. McAlpin (1974). It must be said that Hurrian too has been related to North-East-Caucasian by Diakonoff and Starostin (1989), and this linking is as highly questionable as the Elamo-Dravidian connection[6]. Why have languages like Basque, Etruscan, and Sumerian been maintained in isolation by such an assiduous lumper as M. Ruhlen? Maybe the reason is that these languages have been deeply investigated by specialists, who have sharply criticized and even ridiculed every groundless speculation about their origins. Therefore this sort of academic protection prevents non-specialists from bringing discredit on their own work. On the contrary, it is hard to see how an inaccurate classification of some unknown languages of Amazonia could stir up a reaction from the academic world.

Besides the extinct stocks, there is another case which the tree-diagram cannot account for, namely, the so-called chain-kinship. The tree-diagram is fit to represent the Indo-European stock (and in fact it was firstly conceived for it), because it is a group of languages spreading from an original core-boundary, so that even the

[6] For a report on the debate about the Elamo-Dravidian hypothesis see Sorrentine 1988 and for the external affiliation of the North-Caucasian group see Prevasi 1988.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

most distant ones preserve some common features according to the principle of crossed similarities. But the Altaic languages, for example, are a different case.

ALTAIC
I ALTAIC PROPER
a. TURKIC
b. MONGOLIAN/TUNGUS:
1. Mongolian
2. Tungus
II KOREAN/JAPANESE:
a. KOREAN
b. AINU
c. JAPANESE/RYUKYUAN
1. Japanese
2. Ryukyuan

Table 1. The classification of Altaic according to Ruhlen 1991b:132.

They form what typologists call "the agglutinating belt," which covers Northern Asia and can be adequately represented as a chain, where each family constitutes a ring more or less closely linked to its neighbors[7]. Consequently continuous families share common features but distant ones do not according to the principle of clines. The classification of Altaic languages given by Ruhlen (1991b:130-133) and reproduced in Table 1 is misleading in many respects: there is no link between the most distant families, like Turkic and Japanese and there is no super-formulation unit like Altaic, that can be regarded as the common proto-language[8]. Therefore we miss a suitable descriptive model for such cases.

---

[7] The denomination "agglutinating belt" has been introduced by Austerlitz (1970) in order to point out the typological affinity of continuous families and isolates such as Uralic, Turkic, Mongolian, Tungas, Gilyak, Korean and Japanese.

[8] The state of the art has been lately summarized by Unger, who concludes that "perpetuating the term 'Altaic' probably does more harm than good, especially in the case of East Asia" (1990:481).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

4. **The rate of linguistic change: a tentative evaluation.**

The above arguments lead us to the following general statement: *genetic relationship is a function of time and space*. For example, kinship links fade off sooner or later, which is the natural limitation of every genetic classification. The unanswered question is how long can this "sooner" or "later" last.

Term	Divergence Centuries	Cognate Percent
Language	0 - 5	100 - 81
Family	5 - 25	81 - 36
Stock	25 - 50	36 - 12
Microphylum	50 - 75	12 - 4
Mesophylum	75 - 100	4 - 1
Macrophylum	> 100	< 1

Table 2. Language groupings and their age according to Swadesh 1954:326.

A noteworthy attempt to give an answer to this question was make by M. Swadesh about thirty years ago with the disputed glottochronology[9]. He tried to elaborate a sort of linguistic clock by calculating the rate of change in basic vocabulary, a list of 100 or 200 lexical items regarded as the most persistent in the languages of the world. The results of this attempt can be summarized in Table 2, where he listed the units of genetic relationship in the left column according to an increasing degree of magnitude, indicating the divergence period in the middle and the percent of cognates found in the basic vocabulary in the right column. Although this table is clearly tentative and the figures have only a

[9] I refer mainly to Swadesh 1954 and 1964 and to the basic essay of Gudschinky 1964.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

relative value (Swadesh and his followers were aware of that), I will refer to it, *faute de mieux*, in order to make some quantitative evaluations. I will also refer to it for the units of genetic relationship, since there is no universal agreement on defining what kind of language group has to be considered as family, stock, phylum and so on.

According to the Table some evidence of the genetic relationship is maintained until 10,000 years, and after this approximate limit the link is so weak that it can hardly be recognized. After the most optimistic estimate expressed by Swadesh (1964:578), a time depth of 15,000/20,000 years is the longest span to preserve linguistic continuity. Hence the widest range of genetic comparison turns out to be small in comparison with human evolution.

Of course all these numbers are based upon conjectures: we do not actually know what is persistent and what is not. Swadesh' lists are provisional and only partially tested on historical languages. One can easily admit that the 1st and 2cd person singular pronouns belong to the core of language, because the intuitive claim is confirmed by empirical data. But words are products of human culture, and this is something more than a noisy formulation, and languages, like men, are keen to innovate and ready to forget.

Moreover we do not know the rate of linguistic change. During the last half century the efforts of most linguists have been devoted to theoretical and synchronic research, so that we are not able to answer the simplest questions about diachrony. Let me quote an example from the Indo-European languages.

When we say that both Greek and Armenian are Indo-European languages, we make a qualitative statement, but from a quantitative point of view they are not equally Indo-European, because fewer cognates are found in Armenian than in Greek. Although their split from the Indo-European stock can be pushed back to the 2nd millennium B.C. on the basis of archeological and historical evidence, and although they are accordingly roughly the same age, Armenian turns out to be much older than Greek in terms of relative chronology because they have changed at a different rate.

If we pass from single languages to whole families, we expect that the range between relative and absolute chronology will become wider. I will discuss this case on the basis of a recent study on American languages. According to Greenberg the first wave of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

colonizers, belonging to the Amerind phylum, entered America through Alaska about 12,000 years ago and later scattered southward and broke up into 140 different stocks. This picture is considered quite unrealistic by Johanna Nichols (1990), who claims that the break up of so many stocks needed a longer time span. By calculating the differentiation rate of the estimated 140 Amerindian stocks by the average of 5,000 years each, she proposes two possible dates: 50,000 years ago at a slower rate of branching and 35,000 years ago at a faster one (see Table 3.). The gap between Greenberg's and Nichol's estimates is so striking that no confidence can be put in such linguistic clocks.

Rate of Branching	Age of Stocks	Time to Proto-Northern 'Amerind'	Time to Proto-'Amerind'
1.4	7	70	91
	5	50	65
	3	30	39
1.6	7	49	70
	5	35	*50
	3	21	30
2.0	7	35	49
	5	25	*35
	3	15	21
	2	10	14
3.0	7	21	28
	5	15	20

Table 3. The differentiation rate of Amerind (from Nichols 1990:504). Ages and times in thousands of years.

Moreover, there is a clear contradiction in Greenberg's approach. He supposes at the same time a shallow chronology and a slow rate of change, while the high degree of differentiation of Amerindian languages entails either a deep chronology or a fast rate of change. In general, lumpers make two opposite claims: on the one hand they find the classic comparative method inadequate

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to discover remote relationships, on the other hand they are confident of continuity.

5. **A realistic approach to remote comparison.**

Finally I come to the languages of the Old world, which are the best known and are provided with historical records. During the last twenty years the supporters of remote comparison have lumped together the main Eurasian stocks and some language isolates under two different labels: "Nostratic" according to Illick-Svitych or "Euroasiatic" according to Greenberg[10], as appears from the list comprising Table 4. Nostratic has encountered some acceptance so that its supporters have forgotten that it is only a

Nostratic	Afro-Asiatic South-Caucasoid Elamo-Dravidian Indo-European Uralic-Yukaghir Altaic	Euroasiatic
	Japanese Korean Ainu Gilyak Chukchi-Kamchatkan Eskimo-Aleut	

Table 4. List of Eurasian stocks listed by supporters of remote comparison.

label and regard it as a real language. Recently A. Bomhard (1990) has "reconstructed" the Nostratic phonological system and a sample

[10] For Nostratic it will suffice to mention the outline of M. Kaiser (1990), who belongs to the orthodox branch of Illich-Svitych's followers, together with A. Dolgopolsky and V. Shevoroshkin; a different picture of Nostratic is given by A. Bomhard, quoted below. As for Eurasiatic, a book entitled Indo-European and its Closest Relatives: the Eurasiatic Language Family (Stanford) is announced by Greenberg.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the vocabulary.

In order to evaluate the reliability of these results, let us take into consideration the three stocks we have commented on above: Indo-European, Altaic, and Elamo-Dravidian. The reconstruction of Indo-European is in general well-founded, but not certain, and we must assign a 25% chance of error for it. As for Proto-Altaic, we have seen the reason why its reconstruction is questionable; therefore we assign a score of 50% to it, while to the sharply disputed Proto-Elamo-Dravidian we cannot assign less than 75% chance of error. We have involved three out of the seven stocks of Nostratic and the rate of error is simply discouraging.

What will happen after the involvement of all the stocks? Let us imagine seven shooters around a field, who have to hit some targets, but cannot ascertain their exact placement; if they have some probability of hitting a target, they have almost none of hitting the same. Likewise, the probability of reconstructing a Proto-Nostratic on the basis of seven (or more) conjectural proto-languages is very near to zero. But apart from Nostratic and Euroasiatic, what are the real possibilities of remote comparison?

	'me'	'thee'	'who/what'
Proto-Indo-European	**me-*	**twe*	**kwi-*
Proto-Uralic	**me-*	**te-*	**ke-/12ku-*
Proto-Turkic	**băn-*(*b-*<*m-*)	**săn-*(*s-* < *t-*)	**ki-* 'who?'
Proto-Mongolian	**min-*	**tin-*	**ke-* 'who?'
Proto-Tungus	**min-*	**sin* (*s-* < *t-*)	**qa-* 'what?'

Table 5. Personal pronoun resemblances across stocks.

I will try to answer this question with a typical example. As we already stated, personal pronouns often constitute the most persistent core of a language. After comparing Indo-European, Uralic, and Altaic, divided into Turkic, Mongolian and Tungus, which represent five stocks sharing geographical continuity and typological affinity and provided with well founded reconstructions, we ascertain that the 1st and 2nd person interogative pronouns show resemblances, as appears from Table 4., above.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

What we can reasonably maintain is that all these reconstructed forms share common features, but a further reconstruction of such forms as ***me-*, ** *te-* 'thee' and ***ke-/ko-* 'who, what' would be aleatory, and we do not know what kind of reality could be assigned to them. According to Swadesh's framework, three items of of the basic vocabulary, corresponding to a figure of 3% of the cognates in a list of 100 words, presuppose a phylum on the basis of a genetic relationship with a figure of three features out of the whole heritage?

In short, since we lack a reliable comparative method which would enable us to discover remote relationships and developa quantitative theory of linguistic change, everything going back more than 10,000 years is far beyond control. Consequently every theory about monogenesis is not falsifiable and accordingly remains a speculative matter.

References

AIΩN,
Annali del Dipartimento di Studi del Monde Classico e del Mediterraneo Antico, Sezione linguistica, Napoli: Istitute Universitario Orientale.

Austerlitz, R.
1970 "Agglutination in Eurasia in perspective," in R. Jakobson and S. Kawamoto (eds.), *Studies in General and Oriental Linguistics presented to Shirô Hattori*, Tokyo:TEC Corporation, 1-5.

Baldi, Ph. (ed.)
1990 *Linguistic Change and Reconstruction Methodology*, Berlin-New York; Mouton de Gruyter.

Barbujani, G.
1991 "What do languages tell about human microevolution?," *Tree* 6:151-156.

Bateman, R., Goddard I., O'Grady, R., Funk, W. A., Mooi, R., Kress, W. J. and Cannell P.
1990 "Speaking of forked tonges," *Current Anthropology* 31:1-24.

Bomhard, A. R.
1990 "A survey of the comparative phonology of the so called "Nostratic languages," in Baldi (ed.), 331-358.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Cavalli-Sforza, L. L., Piazza A., Menozzi, P., and Mountain I.
1988 "Reconstruction of human evolution: Bringing together genetic, archaelogic and linguistic data," *Proceedings of the National Academy of Science in the U.S.A.*, 85:6002-6.
Diakonoff, I. M. and Starostin, S. A.
1986 "Hurro-Urartianas an Eastern Caucasian Language," *Munchener Studien zur Sprachwissenschaft* Beihefte 12, Munchen: Kitzinger.
Greenberg, J. H.
1987 Language in the Americas, Stanford: Stanford UniversityPress.
Gudschinsky, S.
1964 "The ABCs of lexistatisitics (glottochronology)" in Hymes (ed.), 612-623.
Hymes D. (ed.)
1964, Language in Culture and Society, New York, Harper and Row.
Kaiser M.
1990 "The Nostratic reconstructions of V. Illick-Svityeh" in V.Shevoroshkin (ed.), *Proto-Languages and Proto-Cultures*, Bochum: Brockmeyer, 138-197.
McAlpin, D.
1974 "Toward Proto-Elamo-Dravidian language", *Language*, 50:89-101.
Morpurgo, Davies A.
1988 "Il metodo comparative, passato e presente," *AIΩN*, 10:27-48.
Nichols, J.
1990 "Linguistic diversity and the first settlement of the New World," *Language*, 66:475-521.
Nocentini A.
1983 *Le lingue d'Europa*, Firenze: Elite.
Provasi E.
1988 "Caucasice settentionale e indeuropeo, *AIΩN*, 10:177-205.
Ruhlen M.
1987a, 1991b, *A Guide to the World's Languages*, Vol. I, London: E. Arnold.
Shevoroshkin V.
1989 "Methods in interphyletic comparison", *Ural-Altaic Yearbook*, 61:1-26.
Sorrentine, A.
1988 "Corrispondenze lessicali nel'ipotesi di parentela elamo-dravidica, *AIΩN*, 10:239-253.
Swadesh M.
1954 "Time depths of American linguistic groupings," *American Anthropologist*, 56:361-377.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Swadesh M.
1964 "Diffusional cumulation and archaic residue as historical explanations" in Hymes (ed.), 624-637.
Ungar, J. M.
1990 "Summary report of the Altaic panel" in Baldi (ed.), 479-482.
Voyles, Joseph
*1989 Bifurcational Germanic and Glottonic Indo-European: a Critique. *Beitraege zur Geschichte der Deutschen Sprache* 111 (1): 16-34
Walde, Alois
1897 Die verbinung zweir dentale und toenendes z im indogermanischen. *Kuhns Zeitschrift* 34: 461-536.
Watkins, Calvert
1985 American Heritage Dictionary of Indo-European Roots. Boston, Mass: Houghton-Mifflin.
1989 New Parameters in historical linguistics, philology, and culture history. *Language* 65 (4): 783-800
Wedekind, Klaus
*1991 Glottalization constraints and Ethiopian counter-evidence. *Folia Linguistica* 24 (1-2): 127-137.
Wescott, Roger W.
1988 Derogatory use of the marginal phoneme /b/ in Proto-Indo-European. *Journal of Indo-European Studies* 16 (3+4): 365-369.
Winter, Werner
*1976 The distribution of short and long vowels in stems. Recent Developments in Historial Phonology, ed. Jacek Fisiak. The Hague: Mouton. 431-446.
Young, Robert W. and William Morgan
1980 The Navajo Language: a grammar and colloguial dictionary. Albuquerque: University of New Mexico Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ESSAYS ON GERMANIC RELIGION

EDGAR C. POLOMÉ
University of Texas, Austin

CONTENTS

INTRODUCTION
INDO-EUROPEAN COMPONENT IN GERMANIC RELIGION
SOME COMMENTS ON *Vǫluspá*, STANZAS 17-18
DIVINE NAMES IN INDO-EUROPEAN
GERMANIC RELIGION: AN INTRODUCTION
POSTSCRIPT

Journal of Indo-European Studies
Monograph Number Six
ISBN: 0-941694-34-8
160 Pages, Illustrated
$30.00

Institute for the Study of Man
6861 Elm Street, Suite 4H
McLean, Virginia 22101
Tel: (703) 442-8010 Fax: (703) 847-9524

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Orthoselection and the Corticalization of Social Behavior

Seymour W. Itzkoff
Smith College

All must agree in this late day in the biological study of human behavior that we are social animals, *sui generis*. Too much in the fabric of our institutional and ethnic commitments departs from the mainline animal, mammalian and primate traditions of adaptive social behavior. For most ethological and socio-biological research and writing, these differences have been sublimated into a challenge. They have been used both to reveal the depths of our underlying biological sameness with the rest of the animal world, as well as to uncover the instrumental behavioral and structural elements that provide linkages with the ancient traditions. They have also been used to explain or describe the matter of difference. The explanatory models that have been accepted into the core literature of the field have revolved around concepts such as "kin selection," "inclusive fitness," gender investment theory, and "optimality."[1] These phrases have symbolized our intellectual confrontation with the fact that natural selection within and between species rarely operates on individuals in their biological aloneness, rather, in relation to their social interactions. The sum total of these behaviors in the social group often determines the outcome of the selective sweepstakes. Yet, assuredly it is the individual and its underlying genetics that provides the material and behavioral substrate for social adaptations and thus the ultimate evolutionary destiny of the group.

---

[1] Hamilton, W. D., 1971. "The Genetical Theory of Social Behavior, I, II, in *Group Selection*, Williams, G. L., ed.. Chicago: Aldine, pp. 23-89. (Inclusive Fitness) Maynard, Smith, J., 1964. "Group Selection and Kin Selection," *Nature*, 201:1145-1147. (Kin Selection) Travers, R., 1971. "The Evolution of Reciprocal Altruism," in *Readings in Sociobiology* , Clutton-Brock and Harvey, eds. San Francisco: Freeman, pp. 52-97. (Optimality)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

We cannot deny that natural selection thus operates to shape group behavior, even in the seemingly surprising ways that "kin selection" and "inclusive fitness" inform us. What I want to do in this paper is to widen the discussion of the origins of that vast domain of seemingly unique human social behaviors that defy the persuasive web of concepts that are presently utilized in the sociobiological literature.

This literature, often ingenious and subtle, sees human sociality in its basic structure of significance little different than did the psychological behaviorists, from John Watson, early in our century, to B. F. Skinner of Harvard, only recently deceased.[2]

The argument is simple and syllogistic: Humans are animals; The test of animal adaptations lies in an animal's reproductive success; social behavior constitutes but one element in the entire "package" of animal adaptations; social behavior must therefore complement the adaptive and reproductive success of an animal species; human social behavior at its explanatory core must be seen as an adaptive strategy of the species leading to reproductive success or failure.

The problem with this perspective is easily seen in the myriad articles and books in the sociobiological literature that purportedly explain everything from altruism and philanthropy to genocide and economic competition to "patently" adaptive strategies in humans.[3]

Often these strategies coexist in starkly contrasting practices within one social setting by one individual and/or his group. Inevitably a multitude of exceptions exists to the rule. Because we are here dealing with issues within the domain of scientific studies and not the humanities, we should always have defining predictions, not exceptions. Were predictability and confirmability to be a measure of the scientific status of the current science of human ethology or sociobiology, the conclusion would have to be that this

---

[2] Watson, J. B. (1913). "Psychology As the Behaviorist Views It," *Psych. Rev.*, 20:158-177. Skinner, B. F., 1938. *The Behavior of Organisms*. New York: Holt, Rinehart, Winston.

[3] see Dawkins, R., 1982. *The Extended Phenotype*. San Francisco: Freeman. Lumsden, C., and Wilson, E. O., 1981. *Genes, Mind, and Culture*. Cambridge: Harvard Univ. Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

line of inquiry is either irrelevant to the human social situation, or homiletics.

In my view present models are hopelessly naive with regard to the pertinent issues affecting human evolution from which arise the major controversies and conflicts that impact on social life.[4]

The very nature of symbolic behavior and meaning in human mammals, which has long since relegated psychological behaviorism in its various forms to obsolescence, will also render irrelvent selectionist evolutionary explanations. Human sociality, I would argue, is undergirded by forms of primate behavior that are *sui generis* in humans. I want to reiterate, humans are still biologically motivated. Mine is not a supra-organic explanation of culture or sociality.[5] Rather, I believe that unique but still factual dimensions of human evolution have yet to be factored into any explanatory model of social behavior. We cannot keep on using chimps, wolves, or ants as explanatory vehicles to understand the blooming, buzzing contradictions in *Homo*'s social existence.

Two concepts will here be utilized to highlight this uniqueness of evolutionary experience that has made human social behavior so distantly related to traditional mammalian selective criteria, as regard social behavior and reproductive success, its ultimate achievement. These concepts are *orthoselection* and *paedomorphosis*. They both clarify evolutionary processes, heretofore well established in other contexts with regard to "lower" animals. In addition, they are complementary concepts in revealing how a line of animals can move from one ecological/selective niche, both structurally and then behaviorally, to another niche, in which

---

[4] Itzkoff, S. W., 1987. *Why Humans Vary in Intelligence*, Ch. V, "Sociobiology: Selection and Survival"; Ch. VI, "Toward a Sociobiology of Man." New York: Peter Lang.

[5] White, L. A., 1949. *The Science of Culture*. New York: Grove. Kroeber, A. L., 1948. *Anthropology*. New York: Harcourt Brace.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wholly new selective criteria come into play.

In the case of *Homo*, over a period of roughly 4 to 6 million years our ancestors "abandoned" the direct survivalistic linkage of behavior with reproductive success, eventually to be shaped by a wholly new system of cortical/symbolic (structures/behaviors) in which reproduction and survival were very indirectly linked.

The concept *orthoselelection* was popularized first by the evolutionists A.S. Romer and G.G. Simpson.[6] It was a response to both the metaphysical "right," epitomized by the Jesuit anthropologist Pierre Teillard de Chardin and his views on orthogenesis, adopted by many secular scientists, of evolutionary "progress" in a straight line.[7] More radical taxonomic views were represented by Richard Goldschmidt, e.g., the hopeful monster. The latter group of scientist were skeptical of traditional "small mutation" processes in orthodox Darwinism, which they believed did not explain the large and vaulting evolutionary leaps represented in the creation of new Orders, Families, Classes, if not Phyla, (evolution above the species level).[8]

Certainly the creation of *Homo sapiens sapiens* from the earliest and fragmentary fossils of proto-*Homo*, some 5-8 mya, a relatively brief time frame, presents a real challenge to traditional views of the process of natural selection working on random mutational changes. Evolution, in this view would need far greater blocs of time to effect the changes than have seemingly been necessary, even were the mutations to be available at an unbelievably opportune rate in time and space.

G.G. Simpson's explanation, endorsed by Ernst Mayr and the geneticist Sewall Wright, was that mutational rates and

---

[6] Simpson, G. G., 1953. *The Major Features of Evolution*. New York: Columbia Univ. Press, pp. 333-376, 373, fig. 47. Simpson, G. G., 1944. *Tempo and Mode in Evolution*. New York: Columbia Univ. Press. Romer, A. S., 1963. "Time Series and Trends in Animal Evolution," in Jepson, G. L., et al., eds., *Genetics, Paleontology, and Evolution*. New York: Atheneum, p. 107.

[7] de Chardin, P. T., 1959. *The Phenomenon of Man*. New York: Harper. Waddington, C. H., 1957. *The Strategy of Genes*. London: George Allen and Unwin. Russell, E. S., 1945. *The Directiveness of Organic Activities*. Cambridge: Cambridge Univ. Press. Sinnott, E. W., 1950. *Cell and Psyche*. Chapel Hill: Univ. of North Carolina Univ. Press.

[8] Goldschmidt, R., 1938. *The Material Basis of Evolution*. New Haven: Yale Univ. Press. Willis, J. C., 1940. *The Course of Evolution*. Cambridge: Cambridge Univ. Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

direction are themselves subject to selective honing.[9] Under certain conditions these mutational rates and unilinear direction could be so speeded up so as to be perceived on one hand as being directed by a metaphysical artificer (de Chardin and E.S. Russell), or on the other as a seemingly violent mutational reconstruction (R. Goldschmidt).

I am here going to omit from the debate the issue of mitochondrial evolutionary change. Promulgators of this view of seemingly "instantaneous creation" have had to retreat repeatedly from their brief estimates for the origins of *Homo*.[10] This method of analysis is abstract and formal, and I have elsewhere critiqued its contradiction of a vast body of established empirical evidence.[11] What has puzzled evolutionists and has led to much contemporary controversy is the near non-existence of intermediate forms of animal species to illuminate this process factually, e.g., in the fossil record. However, it is clear that the human fossil record, by contrast, is a good exemplifier of the manner in which such orthoselective processes — evolution in a straight line — can take place and with enormous ecological consequences, viz. the human social environment in historical times.[12]

In the literature of this concept, there are many other biological examples of creatures who have leaped beyond the

---

[9] Wright, S., 1963. "Adaptation and Selection," in Jepson, G. C., et al., eds. *Genetics, Paleontology, and Evolution*. New York: Atheneum, pp. 281-298. Mayr, E., 1963. "Speciation and Systematics," in Jepson, G. C. et al., eds., *Genetics, Paleontology, and Evolution*. New York: Atheneum, pp. 281-298.

[10] Gribbon, J., & Cherfas, J., 1982. *The Monkey Puzzle*. New York: McGraw Hill. Wilson, C., and Brown, W. M., 1981. "Evolutionary Trees For Apes and Humans Based on Cleavage Maps of Mitochondrial DNA," *Proceedings of the National Academy of Sciences*, 78:2432-2436. Sarich, V., 1981. "Molecular Contributions to the Understanding of Hominid Evolution," paper to AAAS, Toronto: 7 Jan. 1981.

[11] Itzkoff, S. W., 1991. "The Evolution of Human Intelligence: A Reply," *Evolutionary Theory*, 10:63-64 (Jan. 1991). University of Chicago; also Hill, A., & Ward, S., 1988, in *Yearbook of Physical Anthropology*, 31:49-83, postulated the origins of hominids to be between 14 and 4 million years ago, with fossil evidence at 8 to 6 million years ago; also 1990, Feb. 16, *Science*, 247:798-801. (Discussion of Mitochondrial DNA evidence)

[12] Eldridge, N., & Gould, S. J., 1972. "Punctuated Equilibrium: An Alternative to Phyletic Gradualism," in *Models of Paleontology*, Schopf, T. J. M., ed. San Francisco: Freeman and Cooper, pp. 82-115. Mayr, E., 1954. "Change of Genetic Environment and Evolution," in *Evolution As a Process*, Huxley, J. S., Hardy, A. C., and Ford, E. B., eds. London: Allen and Unwin.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ecological and environmental constraints that selectively shaped their social and other behaviors, rapidly bounding beyond the reach of close selective honing and thus moving into entirely new adaptive environments.[13]

The mutations that underlay both the morphological as well as behavioral changes obviously had to have had a long and well-prepared period of positive Darwinian selection. What happens in all these cases is that success in one structural/behavioral domain breeds subsequent success in the same general system. Unless the complex of structures and behaviors thus stimulated are not generally negative in their overall selective consequences, the line of creatures could be away and running.

With regard to human evolution, the particular structural processes that were effected, and in an increasingly intensive and dynamic manner, were those involving the human cortex with conceptual thought as the ever more dominating behavioral element. It is interesting to note that such human characteristics as upright gait, bipedalism, non-brachiating forms of locomotion, were an early part of the human adaptive package.[14] Together with a somewhat larger brain and a sole and ancient specialization vocal articulation it allowed proto-*Homo*, the nonspecialist, to maintain itself in the Oligocene and Miocene African mammalian sweepstakes, 25-10 million years ago.

At some point, perhaps as early as the Pliocene, 5 mya, the growth of this brain catapulted proto-*Homo* over the selective Rubicon. Things began to happen. What things? First, the beginning of the orthoselective "snowball," picking up speed as it descends the evolutionary chute. Second, the mutational pattern of change involved a set of genes called "rate genes." These controlled not merely the morphological structures thereby involved, but also the developmental ordering of their unfolding in the ontogeny of the creature.

---

[13] Rensch, B., 1960. *Evolution Above the Species Level*. New York: Columbia Univ. Press.

[14] Lovejoy, C. Owen, 1981. "The Origin of Man," *Science*, Jan. 22, 211 #4480: 341-350. Leakey, R., 1981. "The Making of Mankind," *The Listener*, Spring, Parts 1-7.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

This was *paedomorphosis*.[15] Gavin de Beer long ago brought forth a wealth of evidence produced over the years by researchers such as Bolk and Garstang to argue that some of the major evolutionary changes in animal life could have taken place along this genetic and evolutionary route. In the case of the human line *paedomorphosis* refers to the slowing of the developmental process such that the infantile features of the ancestral individual are retained in later adult forms.

The result, among many other structural changes in the human line, was the opportunity for a massive expansion of the brain into an individual's cranial vault. The cranium had not yet developed the bony articulations that enveloped and limited the size and shape of earlier hominid skull structures. In the special selective circumstances surrounding the hominids, the growth of the iso-cortex — the thinking brain — became an opportunity, an offer from nature that no species could refuse.[16] It should be stated that this breakthrough was uneven, for as we all know some lines of humans carried forward with them enormous bony articulations in jaw, brow, skull thicknesses, that prevented the full realization of this revolution in brain size and structure. Indeed, both elements went into that ultimate revolutionary form of *Homo* that probably arose in western Asia and Europe some 75,000 to 100,000 years ago. The actual fossils of Cro-Magnon appear only after 32,000 B.P.

In terms of the 2 to 3 million years that the evidence seems to argue for the time between the appearance of the earliest fossils of *Homo habilis* and *Homo sapiens sapiens*, the changes in body/brain structure and culture/sociality/ behavior constitute one of the most radical evolutionary tempi, considering the complexity and size of the line. My belief is that taxonomists will one day recognize this revolutionary transformation in animal life by assigning a new

---

[15] de Beer, G., 1958. *Embryos and Ancestors*. Oxford: Oxford Univ. Press. Bolk, L., 1926. *Das Problem der Menschenwerden*. Jena. Gregory, W. K., 1936. "On the Meaning and Limits of Irreversability of Evolution," *American Naturalist*, 70:571. Garstang, W., 1928. "The Origin and Evolution of Larval Forms," *Report of the British Association for the Advancement of Science for 1928*, 77.

[16] Hardy, A. C., 1954. *Evolution As a Process*, Ch., "Escape From Specialization." London, p. 122.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

status to our own sub-species, perhaps even revising their system of classification.

What probably happened in this explosive orthoselective/paedomorphic process was that once started on its successful inertial mutational trend, and unimpeded by the pressures of close selective honing, certain groups of *Homo* maintained this trend toward increased encephalization, reaching the limits of structural possibility.[17] This limitation may have been dictated by the then-ancient female pelvic structures that now had to accommodate an extraordinarily large-skulled fetus. Many women succumbed under those primitive sociobiological conditions of life.[18]

Nature knew no restrictions on the inertial trend, nor the enormous variability of brain structure that was spontaneously produced, given the most lenient external selective pressures. For example, the large-skulled Boskopoids of Africa, tall ancestors of the modern Bushman and Hottentot, were at the close of the Ice Ages pressed both by Europeans from the north as well Negroids from the west African forest.[19] Eventually pushed into the Kalahari Desert and dwarfed, these now gentle and intelligent Bushmen had evidently proved no match for their rival humans.[20] It was not nature that defeated these peoples, like their ancient *sapiens* progenitors, the Caucasoid Neanderthals. It fell to fellow members of their own species to wield the deadly selective scythe.[21]

The evolutionary product of a process of almost random and multidirectional variability in the growth and restructuring of the hominid brain is the present social puzzlement of human social

---

[17] Gould, S. J., 1977. *Ontogeny and Phylogeny*. Cambridge, Mass.: Harvard Univ. Press. Itzkoff, S. W., 1985. *Triumph of the Intelligent*, New York: Peter Lang, pp. 108-111.

[18] Fisher, H. E., 1982. *The Sex Contract*. New York: Morrow, p. 220.

[19] Coon, S. Coon, 1962. *The Origin of Races*. New York: Knopf, pp. 636-649. Coon, C. S., 1965. *The Living Races of Man*. New York: Knopf, pp. 110-115. Schenk, G., 1961. *The History of Man*. New York: Chilton, pp. 175-181; Illustrations, pp. 154-163.

[20] Thompson, L., 1990. *A History of South Africa*, New Haven: Yale Univ. Press, Plate I, Rock painting Mt. Hope, 140 miles northeast of Port Elizabeth; bow and arrow wielding Capoids (San) vs. Negroid spear and shield. Thomas, E., 1959. *The Harmless People*. New York: Knopf.

[21] Trinkaus, E., 1983. *The Shanidar Neanderthals*. New York: Academic Press. Clark, G., and Piggott, S., 1967. *Prehistoric Societies*. New York: Knopf.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

existence. It boggles good sense to argue in a Darwinian manner that the various forms of social life, or even any one historical or current manifestation, represents a deterministic reflection of *Homo sapiens sapiens* adaptive behavior leading to reproductive and thus selective success.

Indeed you will find interesting sociobiological hints in human crowd behavior, in kin favoritism, in gender differences.[22] But listen to the radical feminists about this latter point. An objective thinker will realize that the traditional predictive canons of the hypothetical method will not produce an unequivocal answer. It is all "maybe," "perhaps," "often," "sometimes."

Find the keystone to the issue of what patterns of sociality, religion, ethnicity, ethicality lead to reproductive and thus evolutionary vindication and you will become the Darwin of the sociobiological world. The reason for our scientific and thus intellectual perplexity, if we are honest about our research pursuits, is that a brain "growed," and in many "tychistic" directions. It grew beyond the selective directionality that is ordinary in the natural biological world.[23]

This does not mean, however, that we are supra-organic creatures. It connotes the reality that a vast and important part of our social behavior is the product of a biological organ, the brain, which developed orthoselectively out of the inner genetic and neurological potentialities long established in the Order of Hominids.

The so-called universals of culture, from religion to technology and art, represent dimensions of this inner biological semantic that has been produced in all human beings by the overarching growth of the allo- and iso-cortex, as well as the mammalian limbic system in a reconstructed anthropoid brain.[24]

---

[22] Freedman, D. G., 1979. *Human Sociobiology*. New York: The Free Press.

[23] Olivier, G., 1973. "Hominization and Cranial Capacity," in Day, M. H., et al., *Human Evolution*. New York: Barnes and Noble, pp. 87-101. Itzkoff, S. W., 1985. *Triumph of the Intelligent*. New York: Peter Lang, pp. 104-111.

[24] Stephan, H., 1975. "Allocortex," in Bargmann, W., ed., *Handbuch der Mikroskopischen Anatomie des Menschen*, 4/9. Berlin: Springer. Irsigler, F. J., 1983. "The Role of the Temporal Lobe on Morphogenesis and Lateralization of the Human Brain," *Speculations in Science and Technology*, 6:445-453. Irsigler, F. J., 1984. "Quantitative Morphogenesis and Lateralization of the Human Brain," *Mankind Quarterly*, 25:3-46.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The universals of culture as we can see by the historical record, must have been long in the making.

The differences in social relations and cultural standards today, are, however, a product of the centrifugal differentiation of *Homo* in the last half million years. The reproductive and thus selective advantages that humans represent in a world-dominating population of approximately 5 billion people did not occur easily. For thousands of generations the power of cortical intelligence, linked to the defensive sociality of female needs in bringing a vulnerable neonate to reproductive maturity, required enormous forethought and discipline to ensure that these practically instinctless forebears would "make it."

That this adaptive strategy was successful in a defensive way by early on in the Pleistocene Ice Ages is clear. Also clear is that the struggle during this period was centered on competition between the hominids (*Australopithecus* versus *Homo*) in the first place, and only later as intra-specific competition, leading eventually to the dominance of *Homo sapiens* and the current hidden conflict between various intellectual levels of social and symbolic thought within the larger human community.

If the evolutionary destiny of the hominids is to be maintained, the probability is that *Homo sapiens sapiens* in its various racial and ethnic forms will dominate and contemporary intellectually intermediate human forms will be relegated to the evolutionary museum, as in the past.

If there is an evolutionary message in the unique experience of our species as it has passed through the eons, it probably has two parts. One is that the orthoselective lurch into hypercorticalization has had the effect of placing many buffers between the receptor and effector phases of human behavior. Thus purely selective considerations of reproductive domination are significantly modified by a vast concatenation of voluntary symbolic meaning considerations. Often these can run counter to what cortical thought would consider instrumentally selective for the individual or social group.

The second is the ultimately decisive role of high intelligence in shaping the nature and destiny of social groups. Indeed, my view is that seen through the refractory telescope of evolutionary time, high intelligence will one day be accepted as the key to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

understanding dominating social groups, nations, and even ethnicities.[25]

To view the reproductive success of the Third World in the mid-late twentieth century is to experience the interaction of both factors that I have just mentioned. The death control that has allowed for the population explosion in the Third World is due to the intellectual achievements of the advanced sectors of humankind in the medical, sanitation, and agricultural sciences.

That educated and highly sapientized populations have allowed this tragedy-in-the-making to develop over these last decades is due both to ideological as well as philanthropic considerations that are the product of our corticalized, limbic, nurturing instincts. That this explosion in the numbers of humans threatens the wellbeing and possible survivability of even the more advanced (e.g. through environmental pollution, political instability, open conflict and universal impoverishment), merely reflects our ignorance of the puzzling nature of our species' social intelligence.

---

[25] Itzkoff, S. W., 1991. *Human Intelligence and National Power: A Political Essay in Sociobiology*. New York: Peter Lang.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

NOW IN SHORT SUPPLY

Proto-Indo-European: The Archaeology of a Linguistic Problem Studies in Honor of Marija Gimbutas

Edited by Susan Nacev Skomal and Edgar C. Polomé

A. Richard Diebold, Jr. – Linguistic Ways to Prehistory
Winfred P. Lehmann – Linguistic and Archaeological Data for Handbooks of Proto-Languages
János Nemeskéri and László Szathmáry – The Anthropological Evaluation of the IE Problem
Nikolai Ja. Merpert – Ethnocultural Change in the Balkans in the Eneolithic
Sándor Bökönyi – Horses and Sheep in the Copper and Bronze Ages
Homer L. Thomas – The Indo-Europeans – Some Historical and Theoretical Considerations
János Makkay – The Linear Pottery and the Early Indo-Europeans
Eric P. Hamp – The Pig in Ancient Northern Europe
Ralph M. Rowlett – Grave Wealth in the Horodenka Group
Christopher Hawkes – Archaeologists and Indo-Europeanists: Can They Mate?
Edgar C. Polomé – Who are the Germanic People?
Gregory Nagy – The IE Heritage of Tribal Organization: Evidence from the Greek *polis*
Bruce Lincoln – On the Scythian Royal Burials
Calvert Watkins – Linguistic and Archaeological Light on Some Homeric Formulas
T.L. Markey – Morning, Evening, and the Twilight Between
Wolfgang P. Schmidt – 'Indo-European' – 'Old European'
Colin Renfrew – Old Europe or Ancient Near East? Clay Cylinders of Sitagroi
Edgar C. Polomé – Marija Gimbutas, A Biographical Sketch

Clothbound, 400 pages with maps and illustrations
Price: $60.00 (Only $30.00 to Private JIES subscribers)
VISA AND MASTERCARD ACCEPTED
ISBN 0-941694-29-1

Institute for the Study of Man
6861 Elm Street, Suite 4H, McLean, Virginia 22101
Tel: (703) 442-8010 Fax: (703) 847-9524

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

An Examination of Lynn's Evolutionary Account of Racial Differences in Intelligence

Maria T. Phelps
University of Western Ontario

Lynn (1987, 1991ab) hypothesized that the Eurasian ecological niche is the selective agent responsible for racial differences in intelligence. More specifically, the difficulties of survival in cold northern latitudes necessitated increased intelligence. This explanation could account for the lower IQ scores of Negroid populations relative to Caucasoid and Mongoloid populations. However, the IQ scores of Amerindians, who are Mongoloids, was inconsistent with that hypothesis. In order to account for that anomaly, Lynn argued that Amerindians are the descendants of an archaic Mongoloid population that crossed the Bering Land Bridge before the main Wurm glaciation, and thus, escaped the selective forces that impelled further increases in Asiatic Mongoloid intelligence. The anthropological evidence, however, fails to support Lynn's hypothesis. It is suggested instead that disease and war were dysgenic selective forces affecting the current IQ scores of Amerindians.

Few topics in the social sciences have generated as much debate as the application of evolutionary principles to the study of human behavior. In recent years, results from a number of studies examining genetic influences on intelligence, social attitudes and altruism, as well as the findings from studies of monozygotic twins reared apart (e.g., Bouchard, Lykken, McGee, Segal & Tellegen, 1990; Rushton, 1990), point to the profound impact of genes in the determination of human behavior. There is no logical reason why the evolutionary principles that account for so much of the variability in animal behavior can not also be used to the same effect for human behavior. Clearly, students of human behavior can no longer ignore the explanatory power of neo-Darwinian biology. Although there has been a grudging acceptance of the role of biology in human behavior, when evolutionary principles are

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

applied to the study of racial differences in behavior many social scientists do not restrict their comments to the data and instead label this research as reactionary and inflammatory. Other critics of a gene-based explanation for racial differences in behavior attack this research on methodological grounds arguing that race is not a biologically meaningful construct. However, the presence of quantitative genetic differences that corresponds to the three major races of classical anthropology negates that argument (e.g., Stringer & Andrews, 1988). In spite of the hostile intellectual climate, a number of evolutionary-based models have been proposed to account for racial differences in intelligence and behavior. In particular, Lynn's (1991ab) model stresses the role of the ecological niche in shaping intellectual and cultural differences between the races. This author does not take issue with such an approach to the study of human behavioral differences, rather I provide an alternative explanation for the observed differences between the groups.

Lynn's Cross-Cultural Analysis of Intelligence

Based on a cross-cultural survey of intelligence test scores Lynn (1991b) makes the following statements: (1) Caucasoids in North America, Europe and Australia exhibit mean IQs of around 100 (2) Mongoloids obtain mean IQs in the range of 100-106 (3) African Negroids obtain mean IQs of around 70, while Negroid-Caucasoids in the United States and Britain obtain mean IQs of about 85. To put it more simply, Mongoloids obtain higher IQ scores than Caucasoids, and Caucasoids obtain higher IQs than Negroids, such that the races can be linearly ordered as Mongoloid> Caucasoid> Negroid, albeit with a great deal of racial overlap in the distributions.

In further support of his claim that Mongoloids and Caucasoids average higher in intelligence than Negroids, Lynn (1991ab) points to the differences in the level and complexity of civilization attained by the three races. In contrast to Negroid populations, early Caucasoid and Mongoloid populations exhibited the defining characteristics of civilization such as agriculture, astronomy, mathematics, law and metallurgy. The universality of racial differences in intelligence test performance and cultural complexity lead Lynn (1991ab) to suggest that they must have evolved in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

accordance with the general principles of natural selection which determine evolutionary development. More specifically, Lynn (1987, 1991ab) hypothesized that the climatic conditions in the niches inhabited by the three races selected for differences in mental ability among the groups.

The Niche as an Agent of Natural Selection

In accordance with Jerison's (1973) argument that radiation into new niches frequently produces increases in brain size, Lynn (1991a) argued that racial differences in intelligence and cultural complexity were the direct result of the radiation of Caucasoid and Mongoloid groups into unoccupied Eurasia. The problems of survival in cold northern latitudes, namely finding food and staying warm, required an increase in brain size and intelligence. The limited availability of plant food necessitated the harvesting of megafauna, such as mammoth, horse and reindeer in order to survive. The openness of the steppes/tundra ecological zone in combination with the greater mobility of herbivores requires more planning than would be needed for the harvesting of a plant-based resource. In addition, hunting of large herbivores required more complex and varied tool assemblages for killing, butchering and skinning. Adapting to the cold climate also required the construction of clothes and shelters to minimize mortality due to frostbite and hypothermia.

According to Lynn (1987, 1991a) the cold winters of Eurasia would have engendered an increase in the three major components of intelligence; general, verbal and visuospatial ability. General intelligence would have been needed to deal with all the new problems encountered in the cold northern environments such as the harvesting of megafauna, construction of shelter, clothes and tools. Improved verbal abilities would have been needed for better communication in order to solve these new problems, for planning future activities, and for transmitting knowledge to offspring. Planning and execution of group hunting strategies and the creation of a more varied and sophisticated tool assemblages would have also necessitated improved visuospatial abilities.

The fact that all three components of intelligence are higher in Mongoloids and Caucasoids than in Negroids is consistent with

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lynn's (1991ab) hypothesis. The typical pattern for the Caucasoid-Negroid comparison is a 15 to 30 IQ point difference in all three abilities. Thus, Lynn (1991a) suggested that all three abilities in Caucasoids came under equivalent selection pressure. The pattern of intelligence in Mongoloids, however, indicates a somewhat different evolutionary history. Mongoloids have slightly higher general intelligence than Caucasoids, and significantly higher visuospatial scores with somewhat weaker verbal abilities (Lynn, 1987, 1991b). According to Lynn (1987, 1991ab), the reason Mongoloids have a more highly developed general intelligence than Caucasoids lies in the colder winters they experienced; consequently, the selection pressures for increased intelligence, in particular visuospatial skills, were greater.

There is a major problem with Lynn's (1987, 1991ab) theory because Amerindian populations score lower on IQ tests than Caucasoids. In an attempt to account for this discrepancy Lynn (1991b) suggested that Amerindians split from the Mongoloid lineage at a point in time predating the ascension of modern "classical" Mongoloid populations, such as the Japanese and Chinese.

The Amerindian Anomaly

The studies reviewed by Lynn (1991b) showed that the obtained mean score of Amerindians stands at around 90 as compared with a Mongoloid mean score of around 105. Interestingly, the profile of intelligence of Amerindians is similar to that of Mongoloids, in that visuospatial skills were stronger than verbal abilities. This suggests to Lynn (1991a) that similar selective pressures were responsible for the unique cognitive profile of strong visuospatial-weak verbal abilities in both groups but that some subsequent selective force acted to raise the whole profile in Asiatic--Mongoloids while leaving that of Amerindians at a lower level. According to Lynn (1991a), the main Wurm glaciation of approximately 24,000-10,000 years ago was the selective agent that raised the cognitive abilities of Asiatic-Mongoloids. The Amerindians escaped exposure to the severe cold of the main Wurm glaciation by crossing the Bering land bridge as early as 42,000- 36,000 years ago (Lynn, 1991a). In support, Lynn claimed that Amerindian artifacts had been dated at 30,000 years in California, at 32,000

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

years in northeast Brazil, and at 30,000 years at Monte Verde in Chile.

Anthropological evidence regarding the settlement of the Americas shows, however, that it was far more recent an event than Lynn suggests. In fact, many anthropologists contend that native peoples entered the New world between 20,000-12,000 years ago. This means that Amerindians did not escape the severe cold of the main Wurm glaciation that, according to Lynn (1991a), produced further increases in intelligence in Mongoloid populations.

1. The Skeletal Evidence

The skeletal remains of early native peoples in the Americas fall into two broad categories; (1) skeletal remains that have been scientifically excavated in secure, datable archaeological contexts, and (2) allegedly ancient finds, often collected by amateurs and removed from their original contexts, or found in circumstances that allow some doubt as to their real age (Fiedel, 1992). The recent use of C14 accelerator mass-spectrometry dating of human skeletal remains has failed to support claims for pre-Clovis occupation in the New World going back to 30,000 or more years (Fiedel, 1992; Greenberg, Turner & Zegura, 1986; Taylor, Payen, Prior, Slota, Gillespie, Gowlett, Hedges, Jull, Zabel, Donahue & Berger, 1986). It now appears that of the currently oldest human skeletons directly dated by this new technique, none is older than 11,000 years (Fiedel, 1992; Greenberg et al., 1986; Taylor et al., 1986).

2. The Dental Evidence

Unlike skeletal remains, excellence of preservation, the existence of numerous independent traits, evolutionary conservatism, between-group variation and ease of observation are some of the attributes that make teeth a fundamental source of information on past and present population histories and relationships (Fiedel, 1992; Greenberg et al., 1986; Turner, 1989). A battery of tests, based on 28 standardized dental traits, have been specifically designed to statistically test the variation between and within Amerindian and north east Asian populations (Greenberg et al., 1986; Turner, 1989).

Dental morphology is in perfect accord with other biological

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

evidence, such as straight hair and broad facial form, pointing to an Asian origin. The teeth are even more geographically specific as they point to North China as the ultimate ancestral home for all native Americans (Greenberg et al., 1986; Turner, 1985, 1989). Based on the degree of divergence between Amerindian and Asiatic populations, Turner (1985, 1989) concluded that the separation of northeast Asian and American populations occurred about 15,000 years ago.

Two other observations are particularly noteworthy. New world dental variation forms three clusters; Aleut-Eskimo, Na-Dene (Southwest USA, north central Canada) and all other North and South American indians (Macro-Indians). In accord with Turner's (1985) findings, a measure of the degree of divergence conducted by Greenberg et al., (1986) indicated quite clearly that the peopling of the Americas was a relatively recent event. Moreover, when standardized measures of the rate of microevolutionary change was applied to the Macro-Indian samples, they revealed that this population had been separated from north east Asian populations, on the average, for 14,000 years (Greenberg et al., 1986; Turner, 1989).

3. The Archaeological Evidence

The opinions quoted by Lynn (1991b) that archaeological artifacts have been dated at around 30,000 years ago in both North and South America must be viewed with caution. Most of these supposedly early artifacts have been surface finds, whose age cannot be determined (Fiedel, 1992; Greenberg et al., 1986). Others have been found in datable geological contexts, but they are so formless that they are most probably not man-made artifacts at all (Fiedel, 1992). Still other artifacts are definitely man-made but are associated with relatively late, more delicate artifacts (Fiedel, 1992). Moreover, more recent and more accurate dating techniques have been applied to many of these artifacts and have produced dates more in keeping with a relatively recent entry into North America (Fiedel, 1992). Finally, the striking similarity of fluted points and associated artifacts of the Amerindian tool assemblages suggests the retention of the tool-making traditions of an ancestral population that originally entered the New World around 10,000-9,500 B.C. (Fiedel, 1992; Greenberg et al., 1986).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

4. The Genetic Evidence

Harper (1980) was one of the first researchers to present a model for the origins and divergence of Amerindian populations based on enzyme and serum protein data. According to this model, the organization of the gene pool responsible for the native American population system began around 19,000 years ago. More recently, a revolution in the analysis of human genetic data has occurred which has enabled the calculation of the genetic difference or distance between groups of humans. Using mitochondrial DNA Stringer and Andrews (1988) estimated that the African-non-African split occurred about 100,000 years ago and that the Caucasoid-Mongoloid split occurred about 41,000 years ago. Using nuclear DNA, Lin, Bowcock & Cavalli-Sforza (1992) reported that the greatest degree of genetic distance has been found between African and non-Africans, an intermediate distance between Caucasoids and northeast Asians populations, and the smallest distance between northeast Asians and Amerindians.

There are, however, disagreements among geneticists concerning the relative timing of the migration into the New World which can in part be attributed to the fact many geneticists have drawn very different conclusion based on portions of the same data (Gibbons, 1992). For example, Greenberg et al. (1986) have put the date of the Amerindian migration at 15,000 years ago whereas other researchers, such as Torroni and Wallace (1993) have argued that the first peopling of the Americas occurred between 42,000 to 21,000 years ago which is consistent with Lynn's position. Because the possibility always exists that different molecular lineages may arise before a population diverges extrapolating backwards does not allow one to pinpoint the date when various groups entered the Americas (Gibbons, 1992). For that reason, anthropologists rely on the archaeological evidence to show where humans were at the time when their genes diverged. To date, secure datable archaeological artifacts supporting the presence of a pre-Clovis culture in the New World have not been found.

5. The Linguistic Evidence

Using a multilateral approach to trace the evolution and divergence of Amerindian language Greenberg et al. (1986) and Greenberg and Ruhlen (1992) argued that the existence of three

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

linguistic stocks represent three separate migrations. The oldest is probably Amerind (11,000-9,000 B.P.) because it centers farther south than the others and shows the greatest internal differentiations. The next migration consisted of Na-Dene speakers because it shows an intermediate degree of divergence from its ancestral Eurasiatic roots. Aleut-Eskimo (5,000-4,000 B.P.) is the most recent. The tripartite classification and the timing of the migration are further supported by Turner's (1985, 1989) and Greenberg's et al., (1986) classification of Amerind dentition with separate groups corresponding to the three linguistic clusters; Aleut-Eskimo, Na-Dene and Macro-Indians. Moreover, Greenberg and his colleagues contention of three separate migrations is also supported by Cavalli-Sforza's (1991) genetic analysis of Amerindian populations.

I have reviewed the evidence regarding the first peopling of the Americas and suggest, contrary to Lynn's thesis, it occurred in the last 12,000 years. Thus, Amerindian populations would have been present in Eurasia during the main Wurm glaciation, and consequently, would have been subjected to the severe environmental challenge that is assumed by Lynn (1991b) to be responsible for current IQ scores in modern Mongoloid populations. The fact that Amerindians exhibit lower mean IQ scores than their Asian relatives, although they display many other behavioral and physiological similarities (e.g., Rushton, 1988, 1991), still needs to be explained. What evolutionary forces could have produced this anomaly? One plausible explanation for the Amerindian anomaly may be found in their recent history. The sometimes dysgenic effects of war and disease come to mind as having had a dysgenic effect on the Amerinds since Columbus's discovery of America.

"Biological Armageddon"

In North America, Jensen (1969; cited in Rushton, 1988) has documented a 40 IQ point difference between unskilled laborers and professional adults. Further, persons from higher SES levels average larger and heavier brains than do those from lower SES levels (Rushton, 1988, 1990, 1991). Moreover, Rushton (1992) noted that officers in the U.S. Army had larger cranial capacities than the enlisted men. If that same brain size and IQ difference between the social classes held for the Amerindians at the time of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the conquest, then imagine the impact on the distribution of IQ scores (and by implication the mean IQ scores for Amerindians) if disease and war disproportionately diminished the ruling elite and the intelligentsia of the New World — at least in so far as the more complex and hierarchical societies were concerned. It would possibly not be applicable, however, to the simpler and more egalitarian societies of North America, such as the Na-Dene, or to the tribal peoples of the Amazon forests in South America.

It may be argued that the demographic pattern of disease in the New World differed significantly from that observed in the Old World. Disease, however, was not the only agent of selection in the New World. Unlike the Macedonian policy in Persia, the Spanish did not institute a satrapy. In an attempt to ensure their ascendancy, the conquerors engaged in mass executions of the upper classes. The nobles and members of the military elite that had not succumbed to disease were further decimated by the superior killing power of the military technology of the conquerors.

1. Disease

It is estimated the Black Death killed a third of the European population between 1346 and 1350 (Nikiforuk, 1991). The plague re-occurred in 2 and 20-year cycles over a period of 300 years until the 1720's, selectively culling between 10-15% of each new generation (Nikiforuk, 1991). The pestilence had a much greater appetite for the poor than the rich. As epidemics came and went, Europeans began calling the Black Death, the beggar's disease or the poor's plague (Nikiforuk, 1991). The other great cause of dying in the Old World was known as the 'cruel disease' or more formally as small pox. By the end of the seventeenth century, mild or severe eruptions of the 'cruel disease' accounted for nearly a third of children's deaths in Europe and had infected nearly four out of five adults (Nikiforuk, 1991). Over hundreds of years, these waves of disease produced in the survivors a resistance to reinfection, a relative immunity that enabled the conquerors and settlers of the New World to survive the plagues they brought with them (Berger, 1992; Nikiforuk, 1991).

When the Spanish entered the Aztec and Incan empires in the sixteenth century, Europeans brought a long array of infections with them which were potentially lethal to human populations who

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

had not developed any resistance due to the selective honing impact of previous exposures to these diseases. (Berger, 1992; Nikiforuk, 1991). Amerindian populations were exposed to a long series of epidemics against which they evolved no resistance whatsoever (Berger, 1992; Nikiforuk, 1991). These diseases were primarily the plague, small pox, measles, typhus, influenza and tuberculosis (Nikiforuk, 1991). In North America, between 1520 and 1899, there were 41 epidemics of small pox, 17 attacks of measles, 10 influenza outbreaks, 4 waves of bubonic plague and 4 attacks of scarlet fever (Berger, 1992). In South America, the number of diseases and the rates of occurrence were far greater than those reported for North America (Nikiforuk, 1991).

Recent studies have estimated the total New World population between 90 and 112 million before they were devastated (Berger, 1991; Dobyn, 1989; Nikiforuk, 1991). Because of the lack of natural resistance to the disease, it is thought that 90% of the population in both North and South America was wiped out (Berger, 1992; Nikiforuk, 1991). Some have rated this as the greatest demographic disaster in human history, leading some historians to refer to it as a Biological Armageddon. More importantly, the demographic impact of the disease in the New World was different to that in the Old World. These mass epidemics affected not only the lower classes but the upper classes as well. The demographic decline of the ruling elite and the intelligentsia has been suggested as one of the primary causes for the relatively swift conquest of the Aztec and Incan empires (Berger, 1991; Nikiforuk, 1991).

2. War

The Spanish forces did not meet with any lack of resistance. The Amerindian military elite took to the field of battle in an attempt to resist the conquest. In one battle alone, it is estimated that over 20,000 nobles and members of the Incan military elite were killed (Berger, 1992). If one considers the fact that the male mortality rate in primitive warfare has been estimated at 30% (Van der Dennen, 1990), then imagine the rate of attrition when armies equipped with virtually stone age weapons are met by a small but experienced mounted force equipped with guns. Because the probability of effective, organized revolt increases with the number

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of intelligent leaders in a society, a conquering power which is numerically weak must take action to reduce the possibility of being overwhelmed by rebellion (Lopreato & Green, 1990; Van der Dennen, 1990). An alien invading force which is numerically weak in such circumstances heightens the possibility of revolt (Lopreato & Green, 1990). This would explain the mass executions of the Amerindian elite effected by the relative minute body of victorious Spanish conquistadores. This pattern of behavior is not an aberration peculiar to the conquest of the New World, as evidenced throughout history and only recently by the mass execution of Polish army officers by Soviet victors in the Katyn forest.

Lynn's (1991b) cross-cultural survey of the broad racial differences in intelligence indicates that any analysis of the causal mechanisms underlying these differences must ultimately be at the level of natural selection of genetic units of heredity. Lynn proposed that climatic changes during the Pleistocene can account for these differences. But, disease and war could also affect the populace by selective culling of the more intelligent members of Amerindian populations, just as World Wars I and II are suspected by some as having had a dysgenic impact on Europe. Losses in the war against the Spanish invaders could have had a similar dysgenic impact on the hierarchically-organized Aztec and Inca populations, although this theory could not be so easily applied to the more egalitarian Indian tribes of North and South America.

Author's Note

I would like to thank J. P. Rushton and W. A. Roberts for their support and helpful comments on earlier drafts of this article. Correspondence concerning this article should be addressed to Maria T. Phelps, Department of Psychology, University of Western Ontario, London, Ontario, N6A 5C2, Canada.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

References

Berger, T.
1991. *A Long and Terrible Shadow*. Seattle: Seattle University Press.

Cavelli-Sforza, L. L.
1991 Genes, Peoples and Languages, *Scientific American*. 104-110.

Dobyns, H. F.
1989 Commentary on Native American demography: More methodological perspectives on historical demography. *Ethnohistory*, 36, 283-299.

Fiedel, S. J.
1992 *Prehistory of the Americas*. Cambridge University Press.

Gibbons, A.
1992 Geneticists trace the DNA trail of the First Americans. *Science*, 259, 312-313.

Greenberg, J. R., and Ruhlen, M.
1992 Linguistic origins of native Americans. *Scientific American*, 267, 94-99.

Greenberg, J. R., Turner, C. G., and Zegura, S. L.
1986 The settlement of the Americas: A comparison of the linguistic, dental and genetic evidence. *Current Anthropology*, 7, 447-497.

Harper, A. B.
1980 Origins and divergence of Aleuts, Eskimos and American Indians. *Annals of Human Biology*, 7, 547-54.

Jerison, H.
1973 *Evolution of the brain and intelligence*. New York: Academic Press.

Lopreato, J. and Green, P.
1990 The evolutionary foundations of revolution. In J. Van der Dennen & V. Falger (Eds.), *Sociobiology and conflict: Evolutionary perspectives on competition, cooperation, violence and warfare* (pp. 107-123). Great Britain: St Edmondsbury Press.

Lynn, R.
1987 The intelligence of the Mongoloids: a psychometric, evolutionary and neurological theory. *Personality and Individual Differences*, 8, 813-844.

Lynn, R.
1991a The evolution of racial differences in intelligence. *Mankind Quarterly*, 32, 99-121.

Lynn, R.
1991b Race differences in Intelligence: A global perspective. *Mankind Quarterly*, 32, 225-296.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mountain, J., Lin, A., Bowcock, A. and Cavalli-Sforza, L. L.,
1992 Evolution of modern humans. *Philosophical Transactions of the Royal Society of London (Series B)*, 337, 159-165.

Nikiforuk, A.
1991 *The Fourth Horseman: A Short History of Epidemics, Plagues, Famine and Other Scourges*. Toronto: Viking Press.

Rushton, J. P.
1988 Race differences in behavior: A review and evolutionary analysis. *Personality & Individual Differences*, 9, 1009-1024.

Rushton, J. P.
1989 The evolution of racial differences: A response to R. Lynn. *Journal of Research in Personality*, 23, 7-20.

Rushton, J. P.
1990 Race, brain size and intelligence: A rejoinder to Cain and Vanderwolf. *Personality & Individual Differences*, 11, 785-794.

Rushton, J. P.
1991 Do r/K strategies underlie human race differences? *Canadian Psychology*, 32, 29-42.

Rushton, J. P.
1992 Cranial capacities related to sex, rank, and race in a stratified random sample of 6,325 U.S. military personnel. *Intelligence*, 16, 401-413.

Stringer, C. B. and Andrews, P.
1988 Genetic and fossil evidence for the origin of modern humans. *Science*, 239, 1263-1268.

Taylor, R. E. L., Payen, C. A., Prior, P. J., Slota, R., Gillespie, J. A., Gowlett, C., Hedges, A. J., Jull, T. N., Zabel, T. H., Donahue, D. J., and Berger, R.
1985 Major revisions in the Pleistocene age assessments for North American human skeletons by C-14 accelerator mass spectrometry: None older than 11,000 C-14 years B. P. *American Antiquity*, 50, 136-140.

Torroni, A., Schurr, T., Yang, C., Szathmary, E., Williams, R., Schanfield, M., Troup, G., Knowler, W., Lawrence, D., Weiss, K., and D. Wallace
1992 Native American mitochondrial DNA analysis indicates that the Amerind and the Na dene populations were founded by two independent migrations. *Genetics*, 130, 153-162.

Turner, C. G.
1985 The dental search for the peopling of the Americas. In R. L. Kirk & E. Szathmary (Eds.), *Out of Asia: Peopling of the Americas and the Pacific* (pp. 31-78). Canberra: *Journal of Pacific History*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Turner, C. G.
1989 Teeth and prehistory in Asia. *Scientific American*, 88-96.

Van der Dennen, J.
1990 Origin and evolution of 'primitive' warfare. In J. Van der Vennen & V. Falger (Eds.), *Sociobiology and Conflict: Evolutionary perspectives on competition, cooperation, violence and warfare*. pp. 149-188). Great Britain: St. Edmondsbury Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Racial Quotas in Public School Classrooms: The Newest Drive for "Equity"

Ralph Scott
University of Northern Iowa

A senior psychologist who has specialized in educational problems relating to low-performing students examines the impact of "untracking" schoolrooms. He perceives this latest attempt to achieve racial balance in schoolrooms as being even more damaging to the educational process than busing, even though it has attracted less attention outside the educational world.

Introduction

During the past several years, key leaders of the educational establishment have marshalled support for the most ambitious "reform" ever: "untracking." This reform is designed to eliminate or sharply reduce "tracking" or ability grouping. If untracking advocates are successful, instructional groups will reflect the ethnic mix of a school district; student learning will no longer constitute the basis of what and how children are taught. Political objectives shall have replaced educational objectives.

Untracking is seldom recognized as a reform, since it is imposed quietly and without the raucous open contentions which marked forced busing. However, untracking will affect schooling more dramatically than did busing. Untracking has already triggered contentious legal arguments. Some examples: In Selma, Alabama, the superintendent charged that his contract was not renewed because he sought to reduce what he perceived as the segregative effects of ability grouping or tracking: this dispute may be litigated.[1] In a different version of untracking, school officials

[1] Putka, G. Tracking of minority pupils takes toll. *Wall Street Journal*, April 23, 1990. The untracking movement is linked to the anti-test and anti-IQ movements. As one example, a position paper of the Association for Childhood Education International declares that the results of testing programs "have been deleterious, particularly for poor and minority children." (Perrone, Vito. On standardized testing. *Childhood Education*, Spring 1991, 132-142.)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of Richmond, Virginia, tracked pupils on the basis of social, emotional and academic considerations; each classroom contained black and white students, and so racial segregation was not a viable issue. But there was ethnic imbalance, and some black parents demanded that white students be distributed equally throughout the classes. This triggered litigation, and Judge T. J. Markow of the Richmond Circuit Court ordered the district to refrain from racially balancing the classrooms, pending further deliberations.[2]

Such issues will surely arouse more contestations in the future: the Civil Rights Division of the U. S. Department of Education has identified tracking as central to compliance with Title VI requirements for categorical programs.

If successful, untracking will literally transform education from an institution primarily concerned with learning, to an institution primarily dedicated to attaining what some consider "equity," which means racial quotas in instructional groups. But in the process, students of all races will be denied opportunities to be academically challenged at a level commensurate with their abilities. Forcing schools to teach the same material to all students, as many untracking advocates insist, will frustrate those students who are prepared only for basic instruction, and will create boredom among America's most talented students. Most certainly, it will reduce productivity of the American schools. After all, there is ample reason why industrialized nations employ school tracking: educational productivity is later translated into industrial productivity.[3] Even in the United States, where untracking has already taken root, some form of tracking continues to be practiced in most schools. A recent survey of 1,200 schools and 6,000 teachers revealed that between kindergarten and sixth grade, 65% of mathematics and science classes were classified as fast track, medium track, or slow track. In the higher grades, the percentag-

---

[2] Judge delays move to "uncluster" white pupils at Richmond school. Special to the *New York Times, Richmond Times Dispatch*, February 2, 1993.

[3] Broderick. C. Look to Germany for ways to train the U.S. 'workplace.' *Rocky Mountain News*, Denver, Colorado, February 21, 1993. The most striking feature of this article, and of news releases which deal with untracking, is the omission of the central reason *why* American schools are under pressure to untrack: that issue is ethnic differences with respect to measured or observed academic abilities and how the ethnic achievement gap (for groups, not individuals) creates tension in the historic educational strategy of placing students into instructional groups where they can most effectively learn.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

es were even larger.[4] The reformers interpret these statistics as evidence that much more untracking is needed. To me, those statistics reveal the extent to which untracking advocates have already succeeded in implementing "reform."

An examination of untracking strategies reveals that the movement is fueled not by a quest for improving the quality education, but for forging sweeping social changes which, if implemented, will forever change the character of schools. For in untracking, teachers are to assure ethic quotas in classrooms, irrespective of student achievement levels, aptitudes, or motivations.[5] Such reform will not only promote mediocrity; ultimately it will further reduce American competitiveness in international world markets.[6]

Racial Desegregation: from Racial Balancing of Schools to Racial Balancing of Classrooms

To understand the "untracking" movement, it is necessary to revisit forced busing, the central educational reform from the 1960s until well into the 1980s. With virtual unanimity, educational experts confidently predicted that busing would increase black achievements, and enhance black self-esteem. Classroom teachers knew better, but were coerced into silence.[7] Teachers who questioned busing were warned about insubordination. Some lost

---

[4] Putka, G., op.cit.

[5] Lewis, Anne C. A tale not widely told. *Phi Delta Kappan*, 2 Vol. 74 (3), November 1992, 196-197.

[6] *The Economist*. Education Survey, Vol. 325(7786), November 21, 1992, 3-18.

[7] Blankenburg, R. A racist proposal. Phi Delta Kappan, Vol. L(5), January 1969, page 312.

It is also remarkable that educational leaders who shaped and implemented busing policies have retained their influence, despite the abysmal effects of the practice they promoted with such enthusiasm. Usually, and in organiza- tions which are responsive to competition, individuals who promote unproductive policies are dismissed, or at least their hands are taken off the levers of power. Consider the fate of executives who formerly set policies for IBM and General Motors. They made mistakes and, like Humpty Dumpty, they fell. Not so in education, where collosal errors are engineered and perpetuated by the same individuals who continue to administer vast, expensive, and counter-productive educational reforms.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

their jobs because they insisted that busing harmed students of all races. Busing also harmed parents and families. As one example, the majority of Boston black parents insisted that their children have the right to attend neighborhood schools: the NAACP successfully forced those parents to bus their children.

In 1993, even the reformers acknowledged that predictions of busing effects were misguided. Forced busing harmed, not helped, blacks: busing seriously disrupted hundreds of school districts, created enormous stress in hundreds of thousands of families, raised the indebtedness of Federal, State and local governments by tens of billions of dollars, and for whites, Hispanics and blacks, weakened the fabric of home, school and community.[8]

---

[8] Scott, Ralph S. *Black Achievement and Desegregation: A Research Synthesis*. Alexandria, Virginia: American Education Legal Defense Fund, 1981.

Teachers who question the merit of untracking are likely to be punished, as were teachers a generation ago who opposed forced busing. But teachers are far closer to classroom realities than are theoreticians who shape policies, and a surprisingly high proportion of teachers oppose untracking (see Scott, Ralph. *Educational benefits of undertakings which simulate RSDS*. Des Moines: Iowa Department of Education, 1990; also, see Bone, Laura, *Teacher Perceptions of Renewed Service Delivery System*, University of Northern Iowa, May, 1991).

Most teachers realize how difficult, if not impossible, it is to effectively teach a ninth grade classroom where the ability range extends from second through twelfth grade, or even higher; the usual teaching tactic in such a situation is to simply "dumb down," and teach several grade levels behind the norms established for ninth grade work. Such a strategy, of course, bores the more capable students, and frustrates the less capable. This aspect of the real world, however, passes the reformers like a distant river.

Untracking advocates realize they must overcome teacher resistance if the reform is to be endorsed and implemented. Therefore, the reformers have employed tactics which proved so successful in coercing teachers into at least tolerating forced busing. They have "networked." And so untracking positions have been taken by the National Council for Teachers of Mathematics and the National Middle School Association, as well as by the Carnegie Council on Adolescent Development. Further untracking support comes from state and community agencies which dispense rewards to those school personnel who untrack.

In the real world of education, teachers working within educational institutions will carry out their "marching orders" if they wish to keep their jobs or to benefit financially from rewards dispursed to those who espouse the politically correct perspectives. Untracking advocates recognize this. And so it is no surprise that state agencies have tied carrots to those willing to untrack. Some examples: The Massachusetts Department of Education has tied discretionary dropout prevention and remedial grant funding to untracking. In Nevada and in Maryland, middle school personnel are advised by state officials to untrack their students. California's Middle Level Partnership and the De-

(continued...)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Forced busing created unexpected problems: one immediate observation stunned those who had engineered forced busing: disproportionate numbers of black children were placed in the lower and less challenging instructional classes.[9] But this could scarcely be attributed to bias. Teachers had simply applied a "color blind" practice of ability grouping, an educational practice employed in all industrialized nations. Ability grouping was based on a simple and direct criterion: observed or measured ability to learn certain material at the time in which specific forms of instruction were to be assigned. Without assessing the reasons for disproportionate ethnic composition in the various instructional groupings, reformers concluded that classroom ethnic imbalance created inequities. Since forced busing had not worked, reformers embarked on a crusade: "forced walking," or requiring children within desegregated schools to walk into, and to attend, classrooms which were racially balanced. Curricular questions were relegated to secondary importance.[10]

Untracking:
Another Reform Based on "Morality"

Forced busing was based on "moral" rather than on educational issues, and the moralizing of busing is the most salient reason for its dismal failure and its ultimately harmful impact, which

---

[8](...continued)
partment of Education's report "Caught in the Middle" encourage middle schools to begin and to maintain untracking. New York's "trainer for trainers' model" has developed a cadre of professionals who offer staff development and technical assistance to schools seeking to promote untracking practices. In various school districts, public school personnel have launched studies to promote untracking: these include those of Ann Arbor, Michigan, and San Diego, California.

[9] Scott, Ralph S. *Education and Ethnicity: The U.S. Experiment in School Integration.* Washington D.C.: The Council for Social and Economic Studies, 1988.

[10] Untrackers' de-emphasis on curricular questions is apparent in the lead article of the 1992 Yearbook, Association for Supervision and Curriculum Development (*Challenges and Achievements of American Education.* Alexandria, Virginia, 1993). Here Floretta D. McKenzie, former superintendent of schools for the District of Columbia, insists that concerted efforts are necessary to bring about the educational equality that Martin Luther King struggled to gain for minority students, as well as for females who are denied opportunities. At the same time, she claims that educational standards will be maintained. But an assessment of educational policies which McKenzie implemented while leading the Washington schools clearly reveals that, if a forced choice must be made between quality and "equity" in education, she would opt for the latter. See also Lewis, op.cit.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

primarily impinged on blacks. Like forced busing, untracking is primarily based on a presumed "morality," which considers racial quotas the most important single criterion. The reformers view as irrelevant evidence which indicates that untracking creates a larger achievement gap within classes, making effective teaching much more difficult. As one example (admittedly simplified but containing much more truth than the untrackers will acknowledge), a school which tracks for tenth grade students may place students with reading levels from second through fifth grade in one class. Students with reading levels from sixth grade through ninth grade may be placed in another class, and students with reading levels from tenth through the high school levels may be placed in a third class. But to untrackers, such an approach is anathema: instead they insist that students of all reading levels should attend the same classes, be assigned the same texts.[11]

Instead of examining classroom dynamics, untracking advocates employ imagery designed to promote the view that tracking is dangerous, racist, and a practice which perpetuates unfairness to minority students.

Some assaults on tracking invoke inflammatory civil rights rhetoric. One author has asserted that untracking "should become a moral imperative along with the belief that slavery is immoral and that all people are created equal under the law."[12] Prestigious educators have characterized tracking as depressing the learning of blacks,[13] as wrongfully segregating students by race[14], as promoting inequality[15], as causing lower ability students to

---

[11] In practice, reformers insist that assigning different texts is itself discriminatory. See Putka, op.cit.; also see Lewis, op.cit.

[12] Hastings, Cloyd. Ending ability grouping is a moral imperative. *Educational Leadership, Vol. 50*(2), October, 1992, 14; Gamoran, A. Is ability grouping equitable? *Educational Leadership, Vol. 50*(1), October 1992, 11-17.

[13] Research demonstrates that the black-white achievement gap remains relatively stable, at one standard deviation, from the preschool years through high school. Of course, some black and some white students are within the superior range: moreover, approximately 16% of white students score at or below the average black score.

[14] Tye, Kenneth A. Restructuring our schools: Beyond the rhetoric. *Phi Delta Kappan, Vol. 74*(1), September, 1992, 11-12.

[15] Oakes, Jeannie. Can tracking research inform practice? *Educational Researcher, Vol. 21*(4), May 1992, 12-21.

Implicit in the untracking rationale is the assumption that environmental factors explain virtually all, if not all, human variability in learning. Thus the professional

(continued...)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

suffer,[16] as forcing minority children into a self-fulfilling racist philosophy,[17] and as one reason minority students don't study.[18] Moreover, an influential Rand Corporation study concluded that tracking has created inferior opportunities for black and Hispanic students to learn mathematics and science, thereby creating "potentially wide scale damage to black and Hispanic learning."[19]

Other educators have asserted that tracking represents a basic (and unacceptable) feature of the structure of education which must be changed.[20] Brochures which promote books urging untracking have alleged that tracking is used to keep minority children in inferior schools and inferior classrooms, a practice which "is harmful to all of us."[21] But is there indeed any authentic evidence that tracking harms minority children?

Inflammatory charges of untracking harm:
Can they stand scientific muster?

Of course tracking should be abolished if it is as harmful as

---

[15](...continued)
literature abounds with anti-genetic phrases. Consider remarks drawn solely from the October 1992 issue of *Educational Leadership*: learning ability is modifiable and is not a general factor (p. 5); educators in untracking schools act on the belief that persistent effort rather than inborn ability is a precursor to success in life (p. 8); educators err if they make rather global judgments about how smart students are (p. 18); at the root of the tracking problem is the persisting opinion that ability is fixed very early in life; teachers can really make children smart (p. 20).

> Of course teachers and schools *can* make a difference. But untracking advocates all too often assume that similar proportions of students of all races can successfully master advanced math and science courses. (Oakes, 1992, op.cit.; Putka, op.cit.) Given human variability and without getting into debates about causes of human variability, this assumption can and should be subjected to open inquiry.

[16]Gamoran, A. Ibid. Another issue that deserves attention is the extent to which untracking will adversely affect the learning rates of the more capable students. There is some evidence that, since the time "reformers" initiated busing and untracking, the proportion of American student securing SAT scores above 650 has significantly declined (Lerner, Barbara. Test scores as measures of human capital. in: Intelligence and National Acievement (R.B. Cattell, Ed.) Washington D.C.: The Institute for the Study of Man, Inc. 1983.

[17] New Press: *Crossing the Tracks* (undated).

[18] Carnegie Corporation Quality Education for Minorities Project National Resource Group, as cited in McKenzie (see note number 10 above).

[19] Putka, op.cit.

[20] Lewis, op.cit.

[21] Education from Yale (undated). Princeton: Yale University Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

alleged. But do allegations against tracking stand scientific muster? For several years I have attempted to gain objective facts in order to conduct replication investigations; in the process, I have corresponded with the most prolific and influential untracking advocates. Until now, I have not received a shred of solid evidence that untracking benefits students of any race. Without exception, the reformers who write or speak so persuasively about the harm of tracking fall strangely silent when asked to empirically support their contentions.

Consider my efforts to assess the charges against ability grouping as lodged by the one person who is generally considered the most influential and enthusiastic leader of the untracking movement: Jeannie Oakes, Professor at the Graduate School of Education at the University of California, Los Angeles. Dr. Oakes is a consultant for the Rand Corporation, an organization which sponsored numerous pro-busing activities from 1960 to late 1989; these publications confidently predicted that forced busing would benefit black children.[22] Described as "the nation's best known expert on tracking" and a person who has "provided a research-based account of the devastating effects of traking in the public schools,"[23]

Oakes has frequently claimed that tracking has a tragic effect on students, and particularly on minority students. But is there indeed any authentic evidence that tracking harms minority children? Citing Oakes as the primary author of a widely quoted Rand Corporation study, the *Wall Street Journal* headlined an educational feature "Tracking of Minority Pupils Takes Toll.[24] In this feature article, Oakes is cited as claiming that tracking is probably based on a student's ethnicity. [25] Despite claims that Oakes has demonstrated the harmfulness of tracking, she acknowledges there is no evidence of untracking benefits ("the best we can

---

[22] As a consultant for Rand Corporationm Robert Crain collaborated with Willis Hawley of Duke University; during those years when busing was advanced as a viable strategy to promote black achievement. Crain authored or co-authored various policy-sensitive publications which focued on busineg and black achievement. These include *Desegregation and Black Achievement*, (National Review Panel on School Desegregation Research and Public Affairs, Duke University, 1977).

[23] O'Neil, John. On Tracking and Individual Differences: A Conversation with Jeannie Oakes. *Educational Leadership*.

[24] Oakes, 1992, op.cit.

[25] Putka, op.cit.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

say for alternatives [to tracking] is that they may be worth a try")[26] And yet, in another article, Oakes claims that studies "reveal striking track-related differences across the board, with some of the most dramatic evidence showing tracking's particularly negative impact on the opportunities of low income African-American and Latino students."[27]

Oakes has also claimed that tracking has become part of the struggle among individuals and groups for comparative social and economic advantages.[28]

Oakes' claims have already influenced the lives of thousands of children: such claims require verification or debunking. Therefore, I wrote to Oakes (June 1, 1992) and requested specific citations of the studies which linked tracking and educational damage to minority students and, if possible, the actual data. She replied with a brief note (June 16, 1992), enclosing two book chapters she had recently written concerning tracking effects.[29] [30] Oakes stated that "both chapters contain extensive references which may include books and articles more specific to your interests." But the first reference[29] contained 315 references, while the second reference[30] contained 31 references. Quite obviously, Oakes' June 16 reply discouraged any serious replication efforts.

Again writing to Oakes on June 24, 1992, I requested specific references of the studies she had cited in asserting that tracking was harmful to poor and minority children. In an undated reply, Oakes suggested that I refer to two additional publications.[31] [32] Actually, one of the references[32] was precisely the article which had triggered my correspondence with her. I had not received any rational or informative reply to my requests, and was back to Square One.

---

[26] Oakes, 1992, op.cit.

[27] Putka, op.cit.

[28] Oakes, 1992, op.cit.

[29] Oakes, J. and Lipton, M. Tracking and unequal opportunities to learn: Changing the culture of testing and sorting. In Rendon, L. and Hope, R. (Eds.), *Educating a New Majority*. San Francisco: Jossey Bass, 1991.

[30] Oakes, J., Gamoran, A., & Page, R. Curriculum differentiation: Opportunity, outcomes and meanings. In *Handbook of Research on Curriculum*, (P. Jackson, Ed.). Washington, D.C. American Educational Research Association, 1992.

[31] Oakes, J. *Multiplying inequalities: The effects of race, social class, and tracking on opportunity to learn mathematics and science*. Santa Monica, California: Rand, 1990.

[32] Oakes, 1992, op.cit.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Untracking and Educational Productivity: Domestic and International Implications

As untracking advocates press efforts to establish quotas for instructional groups, evidence mounts that such efforts conflict with attempts to increase American educational productivity, and therefore American industrial productivity. The staff of England's respected journal, *The Economist*, recently reviewed international educational developments.[33] The central conclusion: not only do American schools employ more untracking than schools of other industrialized nations, but the practice is educationally counterproductive. Further, *The Economist* reported that the "world wide market revolution" requires nations to undertake efforts to maximally challenge students of all abilities, and thus to more fully develop their skills.

The future, concluded *The Economist*, belongs to the nations of Europe and of the Pacific Rim, which have developed and refined educational procedures which seek to match student abilities and schooling experiences: these nations were seen as educating work forces for creation of high value adding jobs. Conversely, American schools were faulted for educating all students, without regard to abilities or educational designations.

American educators have embarked on a crusade to eliminate or drastically reduce ability grouping. As our national experience with forced busing attests, the untracking reform will not be curtailed within the educational establishment, controlled as it is by individuals who have moralized the issues. Students in American schools will only be maximally challenged, and their talents developed to the fullest, if external pressure is exerted on those who control the American education enterprise.

Most Americans believe that schools should prioritize efforts to challenge every student, irrespective of race, gender or social background. But the momentum of the untracking movement and the absence of constructive criticism of this reform, indicate that American schools will steadily become more untracked. Indeed it is unclear how opposition to untracking can be organized, and by whom. But the cost of leaving the outcome of this reform to the politically-pressured educational establishment is high. Nations

[33] *The Economist*, op.cit.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

which do not promote educational productivity are destined to be industrially unproductive; history affirms that underproducing nations decline as, with the course of time, nations rise and nations fall.[34]

[34] Kennedy, Paul M. *The Rise and Fall of the Great Powers; Economic Change and Military Conflict from 1500 to 2000*. New York: Random 1987.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Apollo the Wolf-god

Daniel E. Gershenson

CONTENTS

APOLLO AND THE WOLF
EVIDENCE FOR THE WIND-WOLF
THE WOLF-NAME IN TOPONYMY
HEROES OF GREEK MYTH WHO BEAR THE WOLF-NAME OR PARTAKE IN ITS WIDER CONTEXT
THE DOLPHIN AND THE WOLF
THE WOLF AND DEATH
WEREWOLF-CONFRATERNITIES AND WIND EVIDENCE
EPILOGUE
THE STOIC EXPLANATION OF THE EPITHET LYKEIOS
THE TRIAL OF OLD THIES, 1691
LYKOS AND LYKEIOS: NOTES TOWARD A THEORY OF THE FORMS OF ANCIENT INDO-EUROPEAN RELIGIOSITY
INDEXES

ISBN 941694-38-0
Paperback, 156 pages
Price: $25.00
(Add $1.50 post and handling)

Institute for the Study of Man
6861 Elm Street, Suite 4H
McLean, Virginia 22101
Tel: (703) 442-8010 Fax: (703) 847-9524

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Greek Alliterative Metrics and the Writing System of the Phaistos Disc

Edgar Bowden
Corresponding Member, British Institute of Archaeology, Ankara
(c/o British Academy, London)

Autocorrelation analysis of periodic repetitions in the pictographic text of the Phaistos disk shows that it contains two complex p-alliterative three-line stanzas and a couplet; two other couplets with matching word-lengths line-to-line; and a short metrical section with a word scribally omitted. Computer simulation shows a deficient homophonous writing system, intermediate between consonantal and syllabic and even more deficiently represented in the Side B text, while ten statistical tests prove this side defectively compiled and imprinted by a different scribe. 43-48 per cent of the syllabic pictograms, for 69-77 per cent of the distinct phonemes, are ancestral to Linear B.

Introduction

Many attempts have been made at deciphering the Phaistos disk since Pernier (*op. cit.* 1908) discovered it in the ruins of the small Minoan palace at Phaistos, southern Crete. Some scholars have read it backwards by not taking account of overlaps in the imprints showing its spiral pictographic text to have been written from the perimeter to the center (Duhoux 1977, independently confirmed by me). This isolated text is too short for the sign frequency method successfully used by Michael Ventris on the extensive Linear B texts (Ventris and Chadwick 1973). Apart from the shortness of the text, which contains only 242 pictograms (signs) of 45 different kinds, separated into 61 words by radial word-dividers around the spiral, another problem is to identify the phonemes represented by some of the signs not validated by alliteration or Linear B relationships. No previous investigation has used serial autocorrelation analysis to reveal the alliterative metrics of the text, which pro-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

vide the basis for a provisional decipherment showing that it contains a sacrificial ritual chant accompanying a dance with a complex rhythm like some Balkan traditional folk dances. It also reveals a primitive stage in Greek religion before Cybele became fully identified with the Anatolian Mother Goddess and was still an Indo-European goddess of fertility and battle.

Metrical stanzas

An abrupt increase in the incidence of signs 7 and 29 (see Fig. 1) just over halfway through the Side B text provided an initial clue to the complex metrical structure. These two signs then recur through the rest of Side B, but with no obvious regularity, though a pattern is detectable when the two signs are treated as equivalent, which Evans also recognised, and the text is subjected to serial autocorrelation analysis[2]; the resulting structure is shown in Fig. 6. This Stanza B basic structure is a quatrain of eight halflines, with seven syllables in each except the first and the last two: the final position in the first halfline has two syllables that must have been pronounced as one, while the final syllable of the last two halflines is missing. These missing syllables (catalexes), which the Side A stanza also shows, may represent either grammatical suffixes for which no sign had been invented in this primitive writing system, or rhythmical elements producing a dramatic pause in the dance and recitative, such as *khāli,* 'empty', that occur in the North Indian classical *kathak* dance. The final missing syllable in Stanza B may seem surprising, because it was always assumed that the last pictogram had a 'thorn' on it, a mark like a comma scratched in the clay under 16 signs on the disk. But after the Stanza B structure was discovered, examination of J.-P. Olivier's (1975) enlarged photographs of this final pictogram (Fig. 2) showed that the supposed thorn is a fiber in the clay surface and not a scratch-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

mark. All the thorns can be interpreted as the Greek dative singular suffix (*cf.* the later *iota* subscript) and the stanzas' metrical structures require them to be full syllables, not punctuation marks as some scholars claim (Duhoux 1977).

In Stanza B, the equivalent signs 7 and 29 are alternative cult-symbols for two principal attributes of the Mother Goddess: her nurturance of all living things (sign 7, which I agree with Evans is a breast or udder, a symbol of the Mother Goddess) and her earthly dominion (sign 29, 'head of a lioness', her traditional throne guardian). As well as functioning as syllabic acrophones, both are also logograms representing Greek θεός[3], 'god, goddess', when applied to the Mother Goddess, but possibly θεῖον (neuter), 'the deity', when applied to Cybele, with her hermaphroditic character in this text as goddess of fecundity and of the battle-ax. Such cultistic homophony is typical of the Phaistos disk writing system and distinguishes it from most others: it was not pragmatic, but cultistic, unlike Linear B used for palace and temple accounts and stock-keeping. Both θεός and θεῖον must have been pronounced by the Luwian author (see below) of Side B, and possibly also Section AI, as a monosyllable (synizesis: *cf.* θεός often as θj' in Homer, *eg. Od.* XIV, 251) but with initial labiovelar q^u, implied by the p-alliterative schema of the two stanzas: this mispronunciation may have been due to a phonetic characteristic of the Luwian language; *cf.* Greek τίς, Latin, Hittite *quis, kuis,* 'who?'.

P-alliteration

The quasi-regular repetitions of signs 7 and 29 in Stanza B are most credibly explained as an alliterative poetic device like that of Teutonic and Anglo-Saxon verse, for example William Langland's *Piers Plowman,* though here evidently using a single alliterative consonant rather than progressively changing ones. The fact that such multi-alli-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

terative verse with complex metrics virtually disappeared in Europe after the 14th century CE effectively rules out the suspicion that the Phaistos disk could be a modern fake, as it is scarcely conceivable that anyone in the early 20th century would have reinvented such a form, especially with statistical characteristics matching those of Mycenaean Greek 50 years before the decipherment of Linear B and with features such as the catalexes and the 13 per cent of non-metrical positions occupied anomalously by a p-alliterative sign. At least two possible relics of such an archaic alliterative style occur in the *Iliad* and one in the Sanskrit *Atharvaveda*[4], both probably originating in a 2nd millennium BCE oral tradition. Stanza B occurs in a section of text where thorns are concentrated and Side A was then found to contain a similar concentration of thorns and another but less complex repetitive metric, designated Stanza A, the initial form of which is shown in Fig. 5, though in order to relate it to the strophic phrase structure, six of its eight occurrences of the honorific logogram signs 2+12 (see below) must have been unspoken during recitation; thus Stanza A became a tristich with a short prologue. Stanza B's underlying metric also had to be rearranged to fit the semantic structure into complete lines; its 7-syllable halflines contain 2- and 3-syllable metra, though differently ordered in lines 1 and 4 from lines 2 and 3, in an inverted pattern, but it is even more complicated, since the semantic structure of the chanted text, with the repeated sign-group 29.36.7.8. *Thorn,* interpreted as 'to the Ethos Goddess' (dat.), forms a 5-halflines tristich ($1/2$; $1/2 + 1/2$; $1/2 + 1/2$) with 11-syllable halflines transecting the 7-tempo dance rhythm shown in Fig. 7. Such 7- and 11-tempi and cross-rhythms between words and melody still occur in Balkan folk music[21b].

Whereas in Stanza B there are only two principal aliterative signs (7 and 29) that make up the core of the metrical structure, in Stanza A there are four (1, 23, 26 and 27),

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

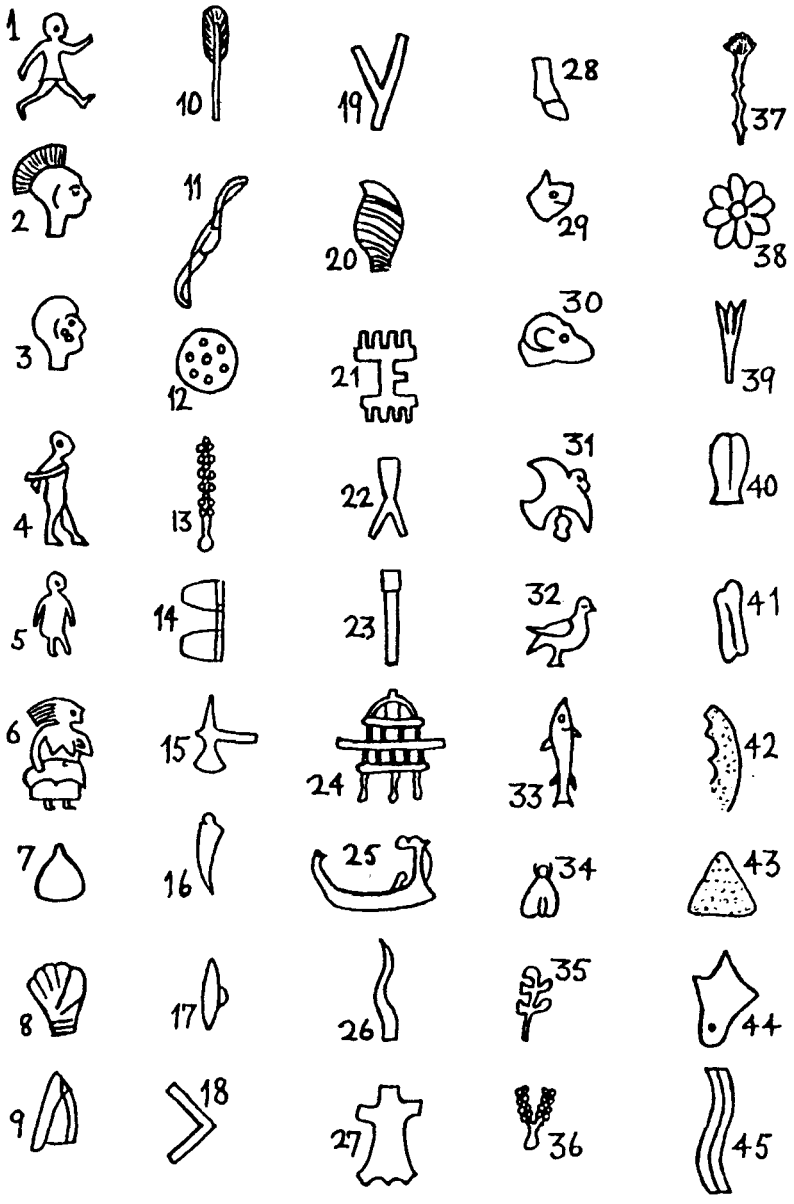
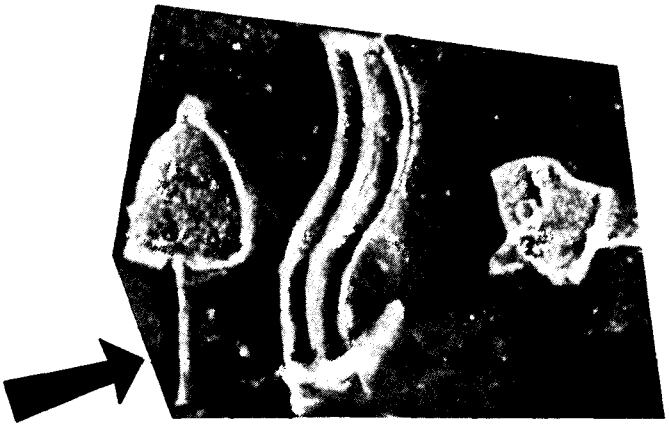


Fig. 1. Pictograms on the Phaistos disk (numbers by Sir Arthur Evans)

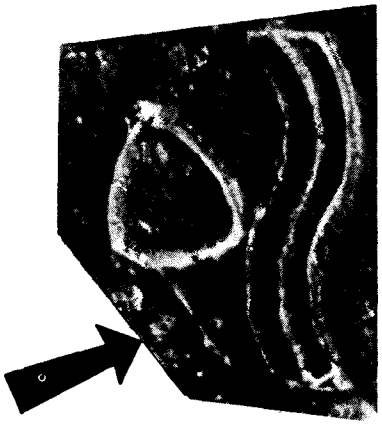
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

while in the two stanzas together there are 9 further signs that occur at least once in these positions defining the repetitive metrical structure: signs 3, 6, 9, 14, 17, 24, 35, 37 and 39. Since two of the principal signs (23 and 27) occur in both stanzas, the stanzas must share the same alliterative schema, based upon a single consonant or closely related consonantal group. Identification of this follows from that of sign 2, a man's head with an upright crest, though contrary to Sir Arthur Evans it does not resemble the headgear worn by the Sea People, which is a decorated circlet with either feathers or rolled leather strips standing up around it, a chin-strap and a neck-guard, whereas that of PD sign 2 resembles the crests made from stiffened hair worn by some North American horse-riding Plains Indians until the 19th century CE. Versions of it occur on Cretan figurines and tablets in the Herakleion Museum, clearly showing it as a crest[5], and it is probably the source of the Etruscan, Greek and Roman helmet crests, the first revealing their horse's-head origin[6]. Its most plausible interpretation, given the west Anatolian MBA provenance implied by the disk's text and certain of its signs, as first suggested by Sir Arthur Evans and others, is that chieftains of Trojan horse-breeders, who were possibly also *shamans*, wore a horse's-mane crest symbolising the legendary ancestry of their tribe, the coveted power and swiftness of the wild horse (probably Przewalski's, with its zebra-like mane) that they had first hunted and then domesticated for riding in south Russia during the 4th millennium BCE (Anthony and Brown 1991). Thus sign 2 represents the chieftain priest of the horse-breeders, who conducted the sacrificial ceremony represented in the disk's text. Two of the ten differences between the two sides' texts, indicating distinct authorships, appeared in a thematic analysis after the decipherment; Side A, where the signs 2+12 ideogram is concentrated ($p = 0.3$ per cent), contains significantly more references to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



a. *Thorn* incision on sign 7 of word A3 (x3, adapted from Olivier)



b. A fibre on the clay surface, overlapping sign 7 of word B30; not a *thorn*. (x3, adapted from Olivier)

Fig. 2. A fibre, not a *thorn*, on word B30.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the *theme of sacrifice* (p = 0.4 per cent) and the *self-interest of the offerant* (p = 2 per cent), the last two being counted together as one trait.

This cult identification of sign 2 provides the clue to a decipherment. It often has sign 12 following it and the structure of Stanza A shows that these two signs together must have three syllables, the middle one alliterative with the 15 defining the metrics of the two stanzas. If sign 2 is Greek ἱππεύς (*ἱqᵘεύς), 'horseman' ('charioteer' in Homer), with sign 12 as Greek ἀσπίς, 'small round shield', resembling shield-trophies in the National Musuem, Athens[7], and denoting the Greek genitive suffix in -ς, then signs 2+12 together represent *ἱqᵘέϝως, 'of the horseman', or more probably 'of the Ancestral Horse-Warrior', the legendary forefather of the tribe, which has the necessary three syllables and alliterative medial labiovelar. All the 15 alliterative signs forming the metrical structure of the two stanzas must then also have names beginning with labials or labiovelars and credible Greek identifications (plus one Luwian) can be found for all of them on that basis. Fig. 3 shows that 20 of the pictograms relate pictorially and phonetically to signs of the Linear B syllabary. Two of these comparisons were rated *Excellent* (signs 8 and 13), 12 *Good,* 4 *Fair* (2, 7, 21 and 43) and two *Poor* (3 and 37), so the total excluding the last two is 18, or 40 per cent of the total 45[8]. But 7 of these 20 are in the p-alliterative set and the correspondence of four (9, 17, 27 and 39) is *Good* or *Excellent*, so there is little doubt that the metrical schema is alliterative and based upon labials.

Method of decipherment

Finally, the remaining 17 signs not validated by alliteration or Linear B relationships were identified as acrophones of the objects they seem to represent: since each sign is a minor research project, this occupied seven years and there

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

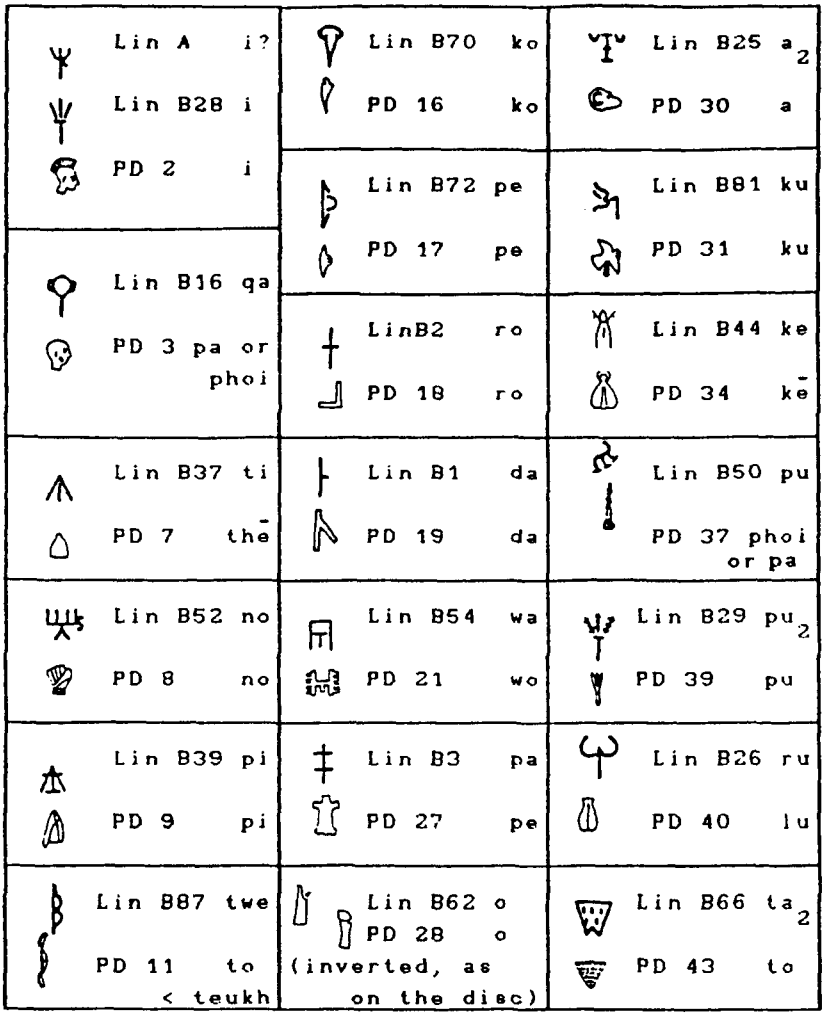


Fig. 3. Phaistos disk signs related to Linear B (numbers after Sir Arthur Evans)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

is no space here to give the often intricate reasons for these identifications. None of these otherwise unvalidated pictograms much resembles any in other known Middle- or Near-Eastern writing systems, so there is no basis for comparative identification of them. Their distinctiveness also supports the idea that they were 'one-off' cult symbols invented for this specific text. The method of decipherment then consisted of assembling all of these acrophones into a complete phonetic transliteration and finally working out a semantically and syntactically consistent Greek reading; only a few of the acrophones had to be changed where no reading was initially possible. But the main purpose of this summary article is not analysis of the Greek decipherment, which occupies six chapters of my 304-page monograph, but of the metrical structure and writing system.

Other structures in the text

Apart from the two well-organised though complicated stanzas, most of the rest of the text consists of three couplets in which corresponding words in each line have the same number of syllables. Two of these couplets, Sections BI and BII, have no detectable regular *alliterative* structure, but Section AI probably has two p-alliterative 5-syllable halflines, a *caesura* and a missing final syllable as in Stanza B in each of its two lines, plus a number of extra p-alliterative syllables not part of the regular metric; also as in Stanza B, one dental (in Ματέρι, word A3) must have been mispronounced as q^u. Section BIII seemed to have no regular structure until it was noticed that if a three-syllable verb had been omitted by scribal error, there is a 3-7-3-7-3 p-alliterative metric possibly related to the 7-metric of the following Stanza B and to the 3-metric of Stanza A, thus making every section of the text metrical. Measuring the pictograms' spacing around the two spirals then showed that on Side B it opens out towards the centre, leaving 20 mm un-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

accounted for and closely matching that needed for the postulated three-syllable omitted word required to reconstruct the only possible regular metric. That there are only 30 words on Side B but 31 on Side A, and five words in Section BIII compared to six in BI and BII, also supports the likelihood that a word is missing here. That this missing word is probably a verb is suggested by the absence of a verb other than a participle in the deciphered Section BIII and by the statistical evidence (see below) consistent with the author-scribe of Side B having been Luwian; the Luwian language often employed adverbial phrases instead of verbs, so a Luwian would be likely to overlook a verb if any word was omitted by error.

Side B: Different authorship

There are ten statistically significant differences on Side B, indicating beyond a reasonable doubt that it was compiled not merely by a different person, but by someone with a defective knowledge of the writing system; probably less familiarity with Greek; and less skill in imprinting that part of the text. The significantly lower incidences of verbs in the four sections of Side B ($p < 2.5$ per cent) support this hypothesis; also a deficit of the bare vowel o on Side B ($p = 1.6$ per cent), since Luwian lacked this vowel; and it was found during the total sign-set estimation (see below) that sign 24, 'Lycian hut' (Mellink 1964), does not fit a well-proportioned selection of signs on Side B, but is statistically over-represented, presumably cultistically, which also supports the Luwian hypothesis. Evidence for the lower level of expertise on Side B is in the alignment of the pictograms, which is significantly less consistent there ($p = 1$ per cent), though only eight signs (1, 2, 7, 18, 23, 27, 29 and 35) occur sufficiently often on both sides for a composite statistical comparison to be made. Other differences are: less accuracy of vowels in the decipherment on Side B ($p = 4.5$ per cent);

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the greater proportion of problematical words in the decipherment on Side B (41.5 per cent *versus* 17 per cent on Side A) is significant (p, 1-tailed, 3 per cent), though this depends on a subjective assessment of what constitutes a *problematic reading;* and the frequencies (p = .04 per cent) and the completeness (p = 1.3 per cent) with which the signs of the total sign-set were selected are deficient on Side B (see below).

Homophonous cult symbolism

The 15 p-alliterative signs involve a high degree of homophony and the equivalence of signs 7 and 29, amongst others, shows cult symbolism to be a basic characteristic of the Phaistos disk writing system, which contrasts with Linear B in both these respects. Many instances, far too numerous to be due to chance, were found where the pictorial identity of a sign augments the meaning of the word in which it occurs, or of one of the adjacent words related syntactically to it, sometimes by a word-play on the Greek name of the sign: for example, sign 28. ὁπλή, 'hoof', and ὅπλον, 'weapon', in word A15 appositive to A16. κοπίς, 'knife'. Nearly all of these were discovered only *after* the decipherment. Obviously at this early stage in the evolution of Greek writing, its purpose was not pragmatic but cultistic.

Calendrical symbolism

Apart from its verse metrics, the disk's text is also extensively structured according to an apparent calendrical symbolism. Sign 38, the 4-petalled, 4-sepalled flower, widespread in Minoan art and possibly signifying rebirth, which ends Side A's text, occurs also near the end of the last word of the 12 that form the outer circle on each side. Stanza A's halflines have 12 syllables each, also each line of Sections BI and BII apart from the prefixed ʿIqᵘέϝως logogram. Sections BI, BII and BIII (with a word missing) have

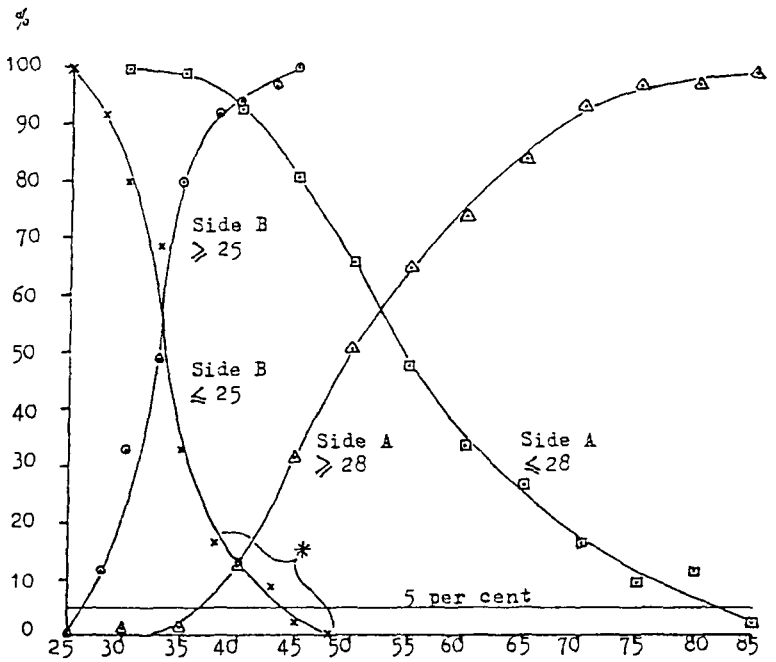
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

six words each, possibly representing the bimesters of ancient calendars. The 7 syllables of the Stanza B metric may represent the 7-day week of the Babylonian calendar (from the four approximately 7-day phases of the Moon), in view of Babylonian loan-words in Linear B texts. The 31 words on each side (with a word missing in Section BIII) may represent the month of the vernal equinox in a solar calendar; conceivably this was carried to Italy by Etruscans and became the Roman imperial calendar, the only one known in the ancient world with some 31-day months. The human sacrifice implied by the decipherment must have occurred at the vernal equinox fertility festival.

Sizes of the sign-sets: Sides A and B

Besides its cultistic nature, another difference from Linear B is the much smaller sign-set from which the Phaistos disk text was compiled. Simulating on a computer the random selection of pictograms from sign-sets of a range of sizes (see Fig. 4), but having the same proportional distributions as those found on Sides A and B[9], showed that Side A was compiled from a total set containing only about 58 syllabic signs[10], compared to the approximately 90 of the more systematically developed Linear B syllabic system, while Side B was selected from only about 70 per cent of those 58 and significantly less accurately in its proportions, evidently by a different scribe. The difference from Linear B is even more striking than is suggested by this smaller estimated sign-set, because the 73 per cent homophony[11] in the Phaistos disk text means that no more than 35 distinct phonemes could be represented in it and this it too few for all of the 60 possible terminally open syllables and bare vowels derivable from about 9 principal consonants with the half-dozen vowels of ancient Greek; the system is inherently incomplete. Yet it is not alphabetic, despite the small number of distinct phonemes represented, because the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



Total sign-set S, less 3 logograms and 6 principal alliterative signs.

* Less than 5% of samples with at least 3 signs five times each, as in Side B's text. After eliminating the 9 special signs.

Fig. 4. Sign-set probability distributions. Sides A and B. (see Note 19)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

mean word-length is statistically indistinguishable from that of syllabic Linear B texts.

The acrophones were identified without regard to homophony, but there is a high correlation of 0.83 between the number of acrophones representing particular phonemes and the latter's incidence in the text, due to the cultistic nature of the writing system: the greater the incidence of a phoneme, the greater the likely number of diverse cult contexts its acrophones were required to symbolize. But relative to their phonemic occurrences, acrophones containing the vowel i are deficient (p = 0.3 per cent), perhaps for some cult reason related to the initial-i of the ʿIqᵘέϝως logogram, and bare-o acrophones are in excess (p = 2 per cent): since the writing system is evidently Greek in origin, these extra bare-o signs may have been introduced deliberately as a *shibboleth* against the Luwians. The relationship of acrophones to phonemic occurrences affects the estimation of the number of phonemes in the total sign-set: the marginal totals for consonants and vowels (except for o, i and total bare vowels, see above, where the number of acrophones is used instead) determine the probabilities for the cells of the matrix in a computerised random allocation of 16 more acrophones to it (*ie.* 58 computed total, minus 42 actual *syllabic* pictograms), some of which fall into previously empty cells. In a series of 1000 computer runs, p = 99.3 per cent for an upper limit of 35 phonemes represented, leaving 42 per cent of the 6×10 phoneme matrix empty. Thus the basic principle of this cult-symbolic writing system is the opposite of a pragmatic one such as Linear B, where the compilers strove to denote every distinct phoneme of the language.

Language and usage

That both sides of the disk are in the same language is confirmed by the correlation of 0.83 between the incidences

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Column		1	2	3	4	5	6	7	8	9
h	1a.	L 32.	$\overline{\overline{23}}$.	38.	T[12]	$\overline{\overline{39}}$.	11[13]	2.	$\overline{\overline{27}}$.	25 →
a	b.	10.	$\overline{\overline{23}}$.	18[14]	28.	$\bar{1}$.	T[15]	L(31.	$\overline{\overline{26}}$)	T[16]
l	2a.	L 27	$\overline{\overline{27}}$.	*	35.	$\overline{\overline{37}}$.	21[17]	33.	$\overline{\overline{23}}$[18]	*
f	b.	L(31.	$\overline{\overline{26}}$)	T[19]	2.	$\overline{\overline{27}}$.	25	10.	$\overline{\overline{23}}$.	18[20]
l	3a.	28.	$\bar{1}$.	T[21]	L(31.	$\overline{\overline{26}}$)	T[22]	L 27.	$\overline{\overline{14}}$.	32 →
i	b.	18.	$\overline{\overline{27}}$[23]	6	18.	$\overline{\overline{17}}$.	19[24]	(31.	$\overline{\overline{26}}$)	12[25]
n	4a.	L 13.	$\bar{1}$[26]	23.	19.	$\overline{\overline{35}}$.	T[27]	10.	$\bar{3}$.	38[28]
e	b.	L 27.	$\overline{\overline{27}}$	*	35.	$\overline{\overline{37}}$.	21[29]	13.	$\bar{1}$[30]	*
						Word A31:	10.	3.	38[31]	

Fig. 5. Stanza A initial structure.
(see Note 20)

Columns (Syllables)		1	2	3	4	5	6	7
half lines	1a.	$\overline{29}$.	36.	$\overline{7}$.	8.	T[18]	$\overline{29}$.	8.13[19]
	b.	$\overline{29}$.	(45.	$\overline{7}$)	T[20]	22.	$\overline{29}$.	36 →
	2a.	$\overline{7}$.	8.	T[21]	$\overline{27}$.	34.	$\overline{23}$.	25[22]
	b.	$\overline{7}$.	18.	35[23]	$\overline{7}$.	(45.	$\overline{7}$)	T[24]
	3a.	$\overline{7}$.	23.	18.	$\overline{24}$[25]	22.	$\overline{29}$.	36 →
	b.	$\overline{7}$.	8.	T[26]	$\overline{9}$	30.	$\overline{39}$.	18 →
	4a.	$\overline{7}$[27]	2.	$\overline{6}$.	35.	23.	$\overline{7}$[28]	*
	b.	$\overline{29}$.	34.	$\overline{23}$.	25[29]	(45.	$\overline{7}$)[30]	*

Fig. 6. Stanza B 7-metre round-dance.
(see Note 21*a* and compare the transecting 11-syllable metric of the phrase structure)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the phonemes (vowels as well as consonants) in the two sides' texts. That the language is Greek is implied by the correlation of 0.90 between the incidences of consonants in a Linear B sample and in the transliterated Phaistos disk text. The prevalence of 4-syllable words carries the same implication, suggesting the typically disematic personal epithets of ancient Greek, while the occurrence of suffixes resembles that of Greek, or at least a similar synthetic language. The mean word-length resembling Linear B rules out Luwian, at least spelt with the repetitive syllables of Hittite cuneiform and Luwian hieroglyphic; and if it were Luwian, it is difficult to see why one of those contemporaneous writing systems would not have been used on the west coast. Finally, the well-validated word A4 seems to rule out Phrygian, the 2nd millennium BCE language most similar to Greek. The extensive relationships to the Linear B syllabary leave no credible alternative but some provincial, vowel-contracting dialect of Greek written, as shown by the statistical analysis, in a primitive writing system intermediate between consonantal and syllabic. Although some of the pictograms were chosen to represent particular phonemes, other less frequent sounds that happened to occur in this ritual text were represented only little more than consonantally by using the same pictograms, instead of the scribes complicating the system by inventing new signs especially for them. While the casual inversion of certain pictograms (*eg.* the two signs 27 in word A29 and the invariable inversion of sign 7, 'breast, udder' apparently only to save 20 per cent of space along the spiral suggests that this writing system had been used cultistically for a generation or more, it was probably augmented or partially recreated with appropriate cult symbols for each successive application[12]. This mode of writing persisted until the system was rationally developed into the Linear B syllabary used for the quite different purpose of chancery accounts. So the es-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sence of this earliest Greek attempt at writing was not phonetic accuracy but, as Evans first implied, diversity of cult symbolism in a mnemonic ritual text with 'magic speaking pictures' which the priests could display to impress the illiterate tribesfolk.

Conjoint Trojan-Luwian MBA tribal provenance

A credible hypothesis accounting for these analytical results and the decipherment following from them is that the community for which the Phaistos disk was created was a joint culture of Trojan horse-breeders settled with somewhat earlier immigrants, Luwian fisher-farmers, in the valleys of the west Anatolian littoral from mount Sipylus, the center of the Mother Goddess cult near modern Izmir, southward to the river Maeander[13] (*ie.* coastal Arzawa), with the male-dominant pastoralist Trojans[14] politically ascendant over the probably female-dominant[15] Luwian fisher-farmers, though not culturally ascendant, since the migratory life of pastoralists does not encourage the development of arts and crafts as in settled communities. This would have placed them within the diffuse geographical region known as the lands of the *Ahhiyawa* (Güterbock 1983), which was probably the area inhabited by all the Greek-speaking tribes of the 2nd millennium BCE on both sides of the Aegean[16]. The deciphered text implies an enforced dynastic marriage between the Trojan chief (sign 2) and the Luwian priestess (sign 6) of Cybele, whose brother, the former king (sign 4), was ritually sacrificed (word A11) for the benefit of the Trojan chieftain's son and chief-designate (sign 5), he is turn being ritually married to Cybele (word B6) in a Mother Goddess fertility cult. The horse-pastoralists may have acquired the cult of Cybele as goddess of the sacred ax *labrys* from the Luwians. That sign 15, 'ax', was unspoken and therefore a determinative ideogram is indicated by the fact that word B8, which it prefixes, is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the only one in Section BII having more than four syllables. That *labrys* was a non-Greek word explains why it needed to be illustrated in a Greek text by a type of ax presumably familiar to Trojans at that epoch. Greek Κυβέλη may, I suggest, derive from *κυ-βαλjω, 'whirl (the battle-ax) around', *cf.* κυβελίξω, 'strike with an ax', and κύβηλις, 'ax, cleaver.' Battle goddesses such as Norse Freyja, the Armed Aphrodite and Akkadian Ishtar were also goddesses of fertility, because for the ancients, thunder and lightning were the din of the sky-gods at war, while the accompanying rain fertilised the earth. By the following millennium Cybele lost this original, though as yet still hypothetical, battle aspect and became identified with the ancient Mother Goddess of Anatolia as a deity solely of fertility[17].

Sign 3 has a profile distinct from the thin aquiline face of sign 2 and resembles carved ivory heads of Mycenaean warriors[18]. Since there is no evidence for literacy at Troy and the Phaistos disk signs bear almost no resemblance, especially in aesthetic style, to the later Luwian hieroglyphic writing, it is more likely that the Phaistos disk writing system was devised not by either the Trojan horse-pastoralists or the Luwian fisher-farmers, but by Mycenaean missionaries who had experienced Minoan culture in Crete. In trying to introduce Minoanised Mycenaean culture to western Anatolia, they also pioneered the Mycenaean commercial expansion that took over from the Minoan sea-traders in the 15th century BCE. The Phaistos disk's date is not accurately known, as it has not been subjected to carbon-14 dating analysis by the Herakleion Museum where it is displayed, though this could employ very small samples taken from the edge, where fragments of straw used in making the disk appear to be embedded. The obviously close ancestral relationship to Linear B suggests the late 15th century BCE as the most probable date, a decade or two before the appearance of Linear B texts in Crete. Pottery finds show that

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Troy and Mycenae were in contact by then (Stubbings 1972, 653). This would eliminate the unexplained gap of two centuries from the traditionally assumed MMIII date and make the Phaistos disk an immediate precursor of Linear B, with its cultistic component eliminated, the syllabary enlarged and the pictographic signs simplified for faster writing. The largely ideographic, though apparently Greek, Arkalokhori ax inscription (Bowden MS, Chapter 15) would in that case be an even more primitive stage of the same writing system. If the alliterative verse style of the two stanzas (and of Luwian ritual) was of Mesopotamian origin *via* Assyrian trade colonies (*karum*) in Anatolia, this would support a 15th century BCE date, since it was only after Old Babylonian times, from *circa* 1595 BCE, that the half-line in this verse style developed more than two assonant syllables. Evidence that the Phaistos disk was known to the compilers of Linear B is the similarity of Lin. B sign 62, o, to PD sign 28, 'horse's hoof', in the inverted form of the latter in both of its occurrences on the disk; the Linear B scribes uncritically copied it upside down.

Identification of the pictograms

All are in ancient Greek except sign 24 in Luwian. They are discussed in detail in Bowden MS. Those related to Linear B are marked B, while P marks the 15 which are p-alliterative in the metrics of the two stanzas. Most pictograms denote phonetically the initial sound of the object represented. Wherever possible, the identifications have been related to a consistent context of an agricultural-pastoral fertility and lunar sacrificial cult, as suggested by the initial stages of the decipherment.

1. πεζός, 'on foot', a walking man (P);
2. *ἱq^{u}εύς, 'horseman', man with horse's-mane headcrest (B) (not Sea People's helmet suggested by Evans):

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

3. **padewe* (*cf.* Palmer), or φοιg^{u}αστεύς (Ventris & Chadwick), 'priest';

4. ϝάναξ, 'lord', the supplanted Luwian chief and sacrifice in the ritual;

5. υἱός (ϝhιός), 'son', the Trojan heir for whom the sacrifice was made;

6. Πότνια, 'lady or mistress', Luwian incarnation and priestess of Cybele (P);

7. θηλή (cogn. Lat. *fēllare,* 'suck'), 'udder, teat' (Evans), symbol of the Mother Goddess's nurturance (PB; but Lin. B37, ti, probably derives from *tiripoda,* 'tripod');

8. νωμάω, 'handle or distribute food, etc.', a human hand (B, Schwartz);

9. πῖλος, 'felt (cap)', later the Phrygian cap, symbol of Atys in the Mother Goddess cult (PB; *cf.* Evans, *tiara*);

10. ὀϊστός, 'arrow' (Evans);

11. τόξον, 'bow' (Evans) (< *τευχ-, B);

12. ἀσπίς, 'small round shield' (*cf.* gilt grave goods, Athens Museum), the Greek genitive suffix -ς;

13. ϝρόπαλον, 'cudgel' (Evans) or ῥάβδος, 'rod (of office)';

14. πέδας, 'fetters, manacles', (Evans) (P);

15. † This ax occurs only once, as a determinative ideogram, and does not represent any phoneme.

16. κοπίς, 'knife', (Evans) (B);

17. πέτρα, 'rock', a stone probably used for crushing olives; *cf.* sign 36 (PB);

18. ὀρθός, 'perpendicular', a right-angle possibly used in designing the Luwian temple-house, sign 24 (B; Lin. B82, ro, by metathesis);

19. δαιγμός, 'division, partition', (or a cognate), for a craftman's angular measure, thus identified to fit Linear B sign 1, da, (B);

20. *ϝέλικες, 'spiral'; helmet sea-shell, *Galeodea echinophora* (mirror-image); (not jug with lost handle, suggest-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ed by Evans, since the pictograms are imprints);

21. ϝοῖκος, 'abode', possibly the plan of a warrior age-grade house (B);

22. ἄρ(α), 'then, thus, etc.', occurring only as a logogram; a pun (ἀραιαί) on the thin crippled legs of Haephaistos, fire-god and metal-smith;

23. βαίτυλος (< Semitic *beth'el,* 'god's house'), 'meteoritic sacred pillar' (P);

24. *parn* (Luwian), 'house', elaborated (lakeside?) stilt hut (Mellink) symbolizing the temple-house of Cybele (P);

25. ναῦς, 'galley' with recurved stern, ram prow and foremast; possibly a mythic boat ferrying the Moon goddess back from the western horizon.

26. πῦρ, 'fire', the sacred hearth-fire of the temple-house (P);

27. πέλλα, originally 'animal pelt'? (Lat. *pellis*; *cf.* πέλτα, 'leather shield'), probably a sacred horse-hide used in laying out offerings to the gods (PB);

28. ὁπλή, 'horse's hoof', (not 'ox', suggested by Evans, because uncloven) (B);

29. θήρ (labialized in Aeolic φήρ, I.-E. $g^{hu}\bar{e}r$), 'wild beast' especially lion; Mother Goddess's lioness throne guardian (*cf.* Evans) (P);

30. ἀρνειός, 'ram', curly-horned mouflon, *Ovis musimon* (B);

31. κυανο-πτέρυξ, 'child of Aphrodite, dark-winged as the raven', or κόραξ, 'raven', symbol of an excarnation death cult? (B, Schwartz);

32. οἰνάς (because not p-alliterative in Stanza A), 'rock-dove' (with wine-coloured breast), *Columba livia;*

33. σέλαχος, 'shark', (?*Carcharodon carcharias,* great white, with lunate tail; cogn. *σελήνη,* 'Moon'), symbol of lunar sacrificial cult; (it does not resemble the tunny suggested by Evans);

34. *κηρο-δομεύς, 'bee', 'builder in wax', symbol of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mother Goddess's priestesses at Ephesus (B);

35. φυτόν, 'young plant', the archaic Greek suffix -φι(ν), also phu (P);

36. ἐλαίϝαι, 'olives' (Evans);

37. φοινίκιος, 'spice (fennel?)', or πάπυρος, 'papyrus'; (PB);

38. ῥυτή, *Ruta graveolens* (suggested by the Royal Botanical Gardens, Kew: *cf.* golden flower in Mokhlos tombs), four-petalled, four-sepalled shrub, symbolizing rebirth?;

39. πυρός, 'wheat' (not κρόκος, 'saffron', because p-alliterative) (PB);

40. λύρα, 'lyre', accompanying the round-dance and later the symbol of Apollo (B; Linear A, Schürr);

41. ὀστέω, 'two bones', possibly from the foreleg of a horse and used as a flute accompanying the round-dance (*cf.* Mongol excarnation rite, Tibet);

42. μήνη, 'Moon' (partially eclipsed?) for a nocturnal sacrifice (σφάγια): inverted mirror-image of the Moon's right limb dotted with craters and deeply indented by the three principal dark maria;

43. *τόρqʷιδει (*cf.* Palmer), 'with spiral', top shell, *Trochus maculatus;* this and sign 20 both have the same spiral form as the text, symbolizing the thread of life unwound from a spindle and cut by the Three Fates (B);

44. ῥόμβος, 'bull-roarer' (Evans), used in the ancient Greek fertility cult, *or* *Ῥόδος*, 'Rhodes' (inverted mirror-image), as a Minoan snake-cult center;

45. Μαίανδρος, 'river Maeander' (*cf.* river on Marine Style amphora, unnumbered, Herakleion Museum; not p-alliterative, hence not ποταμός); possibly used for immersion of women in the fertility cult and for human sacrifice, *cf.* sign 33 and the myth of Andromeda, also Hesione, daughter of Laomedon of Troy.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Presentation of the decipherment and text-structure

Unlike the text-structure and writing system, the decipherment is not claimed as definitive. Not only may some of the acrophones not validated by p-alliteration or Linear B relationships need modifying, but there remain the two problems of reconstructing early forms of the proposed words of the Greek reading and of finding a self-consistent dialectal model to fit the contracted vowels, the possibly undeveloped d-stems and a few of the consonants. The vowels are the most difficult, because the writing system is too deficient to represent them accurately, while the degree of their contraction and the specific forms it takes may not correspond to any known Greek dialect. Also, if this is the earliest example of Greek writing, there was no pre-existing written model on which 'correct' vowels and contractions could be based and this text was almost certainly not an attempt at standardised spelling, but a primitive attempt to express the general outline (chiefly the consonants), 'as-spoken', of words in a vernacular dialect for which no grammatical analysis had ever been made and which was not regulated, like Mycenaean, in scribal schools. Thus, some of the forms provisionally shown may need amending according to whatever model fits the phonology and the west Anatolian provenance and epoch. It would be possible to change some of the grammatical forms while still fitting the vowel-contracting phonetics; for example word A7 could be περονῷ'(εν) (opt.), 'may they pierce (with knives)'.

Signs 2+12 occurring together as a logogram, ʿIqʷéϝως, 'of the Horse Warrior', are represented by L when the verse meter shows it to have been spoken and by (L) when it must have been unspoken in Stanza A except for two of its occurrences there. To fit the available space, it is expressed as 'the Horseman's' in the English rendering of the text, where some other simplifications have been used for the same reason. T is *thorn;* sign 27 is represented by P when

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

used logographically for various prepositions containing labials, with the general symbolic sense 'offering before the deity'. Asterisks represent catalexes, syllables not expressed by any pictogram or mark but required by the verse meter, at least in Stanza A: the two in Stanza B may represent short halflines ending the stanza for dramatic effect, but the four in Stanza A may correspond to ancient vocalic terminations for the accusative case, not expressible by any Greek acrophone; the corresponding final syllables are placed in round parentheses. In the first couplet and throughout the metrical alliterative structure of the text (thus excluding only Sections BI and BII where there is no regular alliteration), a hyphen in the top line marks p-alliterative syllables (and some dentals mispronounced as q^u) contributing to the meter, ⏑ marks those which do not and ⏑ indicates non-alliterative syllables. Postulated derivatives of the Luwian verb *piya*, 'give', are in *Italic*: similar forms, but not reduplicated, occur in Linear B. The only possible Greek alternative to *piya* fitting the context might be some derivative of πεπαίνω, 'ripen, mature'. Θεός or θεῖον, 'the divinity' and 'divine' (adj.), are always monosyllabic, as θj', due to synizesis in the verse-meter of the text. Square brackets mark words where there are still major problems of morphology or syntax, but these are too complex to discuss briefly here; many of the grammatical derivatives and most of the compounds are unattested, as expected in an almost unknown cult. Curled brackets represent elisions and contractions implied by the acrophonic sequence. Sign 22, ἄρ(α), a logogram, is denoted by 'then' in English: it can express diverse meanings in different contexts, but a typical interpretation fitting most instances here would be 'then, as ordained by tradition'. Acrophones validated by p-alliteration or Linear B relationship are in **bold letters,** in centrast to **bold Italic numbers** for the cult-symbolic signs. Κυβέλη is fully validated twice, in words B6 and B14. The

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

text is printed orthograde for convenience and because some mirror-image signs support the suggestion that the disk is a copy of a casting mold for a metal disk to have the pictograms in *bas-relief.* English punctuation is used in the Greek text for greater flexibility.

Structure of the phonetic transliteration; Greek and English readings.

SIDE A: Section AI. A couplet with penta-syllabic feet, alliterative on the first syllable, loosely related to the matching word-lengths in each line, 3-4-3; 6-4, forming 10-syllable halflines with a *caesura,* c, on the first syllable of the logogram L, signs 2+12, ʿIqᵘέϝως. Treating this trisyllable as a separate word gives an inverted pattern (3-4-3; 3-3-4) resembling the (2-3-2; 3-2-2) of Stanza B. With the missing final syllables (0) and signs 7 and 29 referring to the Mother Goddess, this suggests that Section AI and Stanza B, beginning and ending the ritual text, are of the same verse style, in contrast to Stanza A. D-stems are unrepresented since, unlike Linear B, case suffixes are not spelt out, but denoted by markers: *thorn* and signs 12 and 35. The "frenzy" of word A5 is that of Atys in the later Cybele cult. Signs 2+12 beginning this word were squeezed in as an afterthought, supporting their interpretation as an honorific logogram for the former royal victim of the sacrifice. The rough area (■) after word A8 is assumed to have been a pictogram, deliberately erased.

Dedication: Word A1:L.***13***.1.18.T.
L.wro.pe.ro.i.

A2: ***24***.40.12	A3: 29(***45.7***)T	A4: 29.29.34	A5: L.***4***.40.33	A6: ***27***(***45.7***)12
pa.lu.-s	**tʰē.ma.tʰē.i**	**tʰē.tʰē.kē**	**L.wa.lu.se**	**P.ma.tʰē.-s**
A7: 27.***44.8***	A8: L.6.18■	A9: (31.26)35	A10: L.***41***.19.35	A11: 1.***41***.40.7
pe.ro.no	**L.po.ro**	**ku.pu.pʰu**	**L.o.da.pʰu**	**pe.o(s).lu.tʰē**

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dedication: ʽIqᵘέϝως Λάβρυϊ;

| | | |

Prologue:	A12: L.***32***.23.38.T L.o.**pa**.ru.i	A13: ***39***.11 **pu.to**	
Line 1a:	A14: 2.***27***.25.***10***.23.18 **i.pe**.na.o.**pa.ro**	A15: ***28***.1.T and **o.pe**.i	A16: L(31.26)T (L).**ku.pu**.i
1b:	A17: L.***27.27.*.35.37***.21 (L).**pe.pe.*.p^{h}u.p-**.wo	A18: 33.23.* se.**pa.***	A19: L(31.26)T (L).**ku.pu**.i
Line 2a:	A20: 2.***27***.25.***10***.23.18 **i.pe**.na.o.**pa.ro**	A21: ***28***.1.T and **o.pe**.i	A22: L(31.26)T (L).**ku.pu**.i
2b:	A23: L.***27***.14.32.18.27 (L).**pe.pe**.o.**ro.pe**	A24: 6.18.17.***19.*** **po.ro.pe.da**	A25: (31.26)12 **ku.pu** -s
Line 3a:	A26: L.***13***.1 L.wro.**pe**	A27: 23.19.35.T **pe.da.p^{h}u**.i	A28: ***10.3.38*** o.**pa**.ru
3b:	A29: L.***27.27.*.35***.37.***21*** (L).**pe.pe.*.p^{h}u.p-**.wo	A30: ***13***.1.* wro.**pe.***	A31: ***10.3.38*** o.**pa**.ru.

Prologue: |⏑ – ⏑ | ⏑ – ⏑ | ⏑ – ⏑ |
'Iq^{u}ἔϝως 'όφελεϊ φυέτω;
(dat.) (imp.)

⏑ –	⏑	⏑ –	⏑	⏑ –	⏑	⏑ –	⏑	⏑̄ –	⏑	⏑̄ –	⏑	⏑ –	⏑	⏑ –	⏑
ἰq^{u}-ανί'		ὀφελὸς		'όq^{u}ι(δ)ι		κοπί(δ)ι;		*pipy*(*n*)-		πεφυυῖαν		*seque*(*n*)		κοπί(δ)ι;	
('ηνία)		(acc.)		(dat. appositive)				(<*piya*?)		(<φύω)		(>'έπομαι?)			

⏑ –	⏑	⏑ –	⏑	⏑ –	⏑	⏑ –	⏑	⏑̄ –	⏑	⏑ –	⏑̄	⏑	– ⏑	⏑ –	⏑
ἰq^{u}-ανί'		ὀφελὸς		'όq^{u}ι(δ)ι		κοπί(δ)ι;		*pipj*'-		ὅλβον		πω λο-πέδα		κοπί(δ)ος;	
												(acc.)		(ablat.?)	

⏑ –	⏑	⏑ –	⏑̄	⏑	– ⏑	⏑ –	⏑	⏑̄ –	⏑	⏑̄ –	⏑	⏑ –	⏑	⏑ –	⏑
'Iq^{u}ἔϝως		λαβὴ		Παιδα-φύῃ		ὀφαλείη		*pipy*(*n*)-		πεφυυῖαν		λαβή(n)		ὀφαλείη.	
(nom.)				(pass. opt.)								(acc.)			

For the Horseman's benefit let it (the sacrifice) yield;
horse-reins bounty to the divine-retribution (Horseman's) knife; (the Horseman's) [consequent?] procreated great-giving to the (Horseman's) knife;

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

horse-reins bounty to the divine-retribution (Horseman's) knife; (the Horseman's) foal-footed great-giving wealth *from* (?) the knife;

the Horseman's obtaining for the Child-Incarnate, may it be due;

(the Horseman's) procreated great-giving-obtaining, may it be due.

SIDE B: Section BI. A couplet with no apparent alliterative metric, but with matching word-lengths line-to-line, except ʿIqᵘέϝως prefixed to word B1 and dedicating the Side B text. "Sipulis-city", reputed in ancient texts (Bean 1966, 36), is proposed here to account for the 3rd declension (i-stem) fem.gen. -εϝως of Word B5. As thoughout Stanza B, the dative suffix thorn is attached only to the second component of the compound B6: Κυβέλα{ι} τοι and must have been elided on the first in reciting this metrical syllabic verse.

B1: L.22.40.7	B2: ***27***(***45.7***)35	B3: ***2***.37.23.***5***.T
L.ar'.**lu.t^{h}ē**	**P**.ma.**t^{h}ē.p^{h}u**	**i.p-.pa.wi.i**
B4: 22.25.27	B5: 33.***24***.20.12	B6: ***16***.23.18.***43***.T
ar'.na.**pe**	se.**pa.l^{w}**.-s	**ko.pa.ro.to.i**

ʿIqᵘέϝως ἄρ'λυθείη {ε}'πὶ Ματέρφιν ʿIqᵘο-πάϝι(δ)ι:
(ablat.?)

ἄρ'Νέϝεqᵘεje! Σίπυλεϝως Κυβέλα'-τοι.
(voc.) (<*Σίπυλις)

from the Horseman,

then may he (the sacrifice) be loosed (die) upon the (Earth) Mother for the Horse-Child;

then, Infant! to thee, Cybele of Sipulis-city.

Section BII. A couplet without any alliterative metric, but with matching word-lengths, except word B8 prefixed by the unspoken logogram sign 15, ax †. Word B12 probably denotes the Horseman's *mana* derived from the Goddess.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

B7: ***13***.1.39.33	B8: (***15***).7.***13***.1.18	B9: 22.37.***42***.25
wro.pe.pu.se	**(†).t^{h}ē.wro.pe.ro**	**ar'.p-.me.na**
B10: 7.***24***.40.35	B11: ***2***.26.36.40	B12: 27.25.38.1
t^{h}ē.pa.lu.p^{h}u	**i.pu.e.lu**	**P.na.ru.pe**

λαβη-βυσσὴ	†Θj'Λάβρυ	ἄρ'ποιμαίνε
(voc.adj.)	(voc.)	(imp.)
Θj'Παλλάφιν	ἰq^{u}ι-ελᾶ	προ-νέρωπα
(ablat.?)	(acc. <*-εύς <ἐλάω, ἐλαύνω)	(acc.adj. < ἀνήρ+ωπ-?)

seizing-into-the-depths Ax Goddess, then protect (like a herdsman),
Goddess of Brandishing, the [pre-eminent? horse(s)-drover].

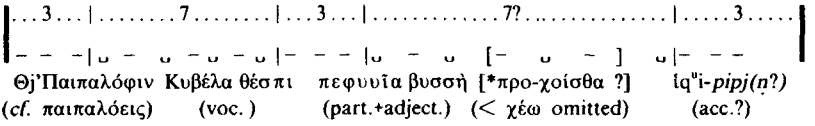
Section BIII. A single line of alliterative verse in 3-7-3-7-3 meter, but with a 3-syllable verb omitted between words B16 and B17, shown by the increased spacing of the pictograms, giving 31 words on each side of the disk and six words here, as in Sections BI and BII. A suggested verb to fill the space in the spiral is shown in square parentheses in the Greek. The -φιν suffix is here taken as the ablative of source. The Bulgarian *horo* also contains these triple groups of consecutive stressed beats interpolated in a 7-tempo melody[21b].

B13: 29.***24***.***24***.20.35	B14: ***16***.14.18	B15: 29.33.1	B16: ***6***.***35***.32.***39***.33
t^{h}ē.pa.pa.wel.p^{h}u (l^{w}?)	**ko.pe.ro**	**t^{h}ē.se.pe**	**po.p^{h}u.o.pu.se**

[B16a: ***27***.***16***.29?] [P.ko.t^{h}ē?]

B17: ***2***.9.***27***.1
i.pi.pe.pe

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



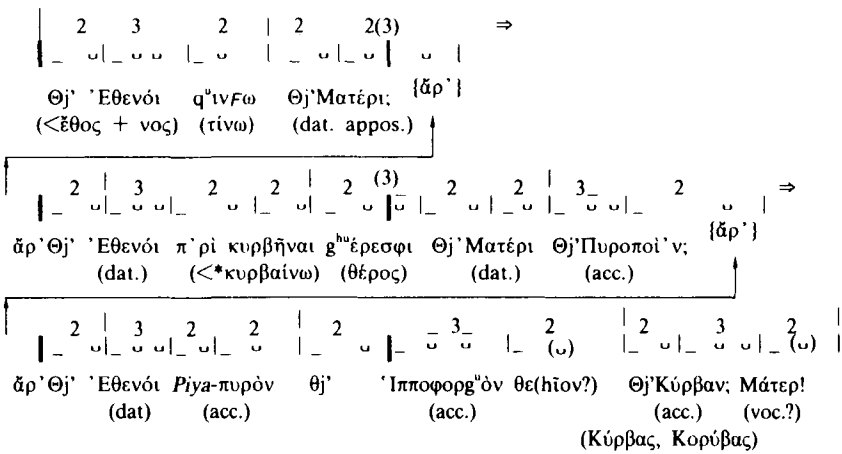
Mountain Goddess Cybele, follower of the deity, (who) procreated in the depths [mayst thou 'pour forth'?] [horses great-giving?]

Stanza B. 11-syllable semantic structure. A tristich comprising a halfline followed by two full lines ($^1/_2$; $^1/_2 + ^1/_2$; $^1/_2 + ^1/_2$), with the same 11-syllable halfline sequence (2-3-2-2-2) shown between lvertical barsl beginning each of the three lines. The metrical structure also forms a quatrain with eight 7-syllable halflines shown in Fig. 6 and in the top line of small numbers here. A few halflines (|) are divided (⇒). The 7-metric transects the phrasing, as in some Balkan folk-music, and therefore was probably an accompanying dance (word B22, περὶ κυρβῆναι), the original ecstatic dance of the Corybantes in the Mother Goddess cult, perhaps related to the 7-tempo Bulgarian *horo* round-dance, Romanian *hora*, Greek *Kalamatianos* and north Indian *kathak* dances with *khālī* 'empty', as well as to 7-meter forms in Luwian ritual texts (Watkins). The adverbial particle ἄρ' must have been effectively enclitic to the preceding line and the catalexes (*) in the third line must have represented short halflines, rather than unwritten grammatical endings as assumed in Stanza A, in order to form the 11-syllable halflines. Where there is no case suffix, the accusative or vocative has been assumed and an infinitive + accusative construction is proposed as a solution of the otherwise obscure syntax: the narrator (the Horseman?) offers in atonement to the Mother ritual dancing (Greek infin.) by the priestess and incarnation of Cybele in her aspects as

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Corybant Goddess, Grain-making Goddess, Divine Horse-Feeder, *etc.*; but the relation of the syntax to details of the cult requires further investigation.

Line 1:	B18: 29.***36.7.8.***T **t^{h}ē.e.t^{h}ē.no.**i	B19: 29.***8.***13 **t^{h}ē.no.**wro	B20: 29(45.7)T **t^{h}ē.**ma.t^{h}ē.i
Line 2:	B21: 22.29.***36.7.8.***T ar'. **t^{h}ē.e.t^{h}ē.no.**i	B22: ***27.34.***23.25 **P.kē.pa.**na	B23: 7.18.35 **t^{h}ē.ro.p^{h}u**
continued:	B24: 7(45.***7***)T **t^{h}ē.**ma.t^{h}ē.i	B25: 7.23.18.24 **t^{h}ē.pa.**ro.pa(rn)	
Line 3:	B26: 22.29.***36.7.8.***T ar'.**t^{h}ē.e.t^{h}ē.no.**i	B27: 9.***30.39.***18.7 **.pi.a.pu.ro.t^{h}ē**	B28: ***2.6.***35.23.7.(*?) **i.po.p^{h}u.pa.t^{h}ē.**(*?)
continued:	B29: 29.***34.***23.25 **t^{h}ē.kē.pa.**na	B30: (***45.7***)(*?) ma.t^{h}ē(*?)	



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to the Ethos-Goddess I atone, to the Mother Goddess;
then to the Ethos Goddess dance as Corybantes through
the summer to the Mother Goddess by the Grain-
Making Goddess;
then to the Ethos Goddess, by the [Divine 'Give-Forage'],
by the Divine Horse-Feeder, by the Corybant
Goddess; Mother!

NOTES

1. This article summarises some of the more important findings from a seven year study of the Phaistos disk (Bowden, unpublished MS). Few of these are entirely unprecedented, for Sir Arthur Evans (1909, 1921) recognised the ritual "chaunt" nature of the text and hinted at its possible connection with the Anatolian Mother Goddess, as well as recognising to a limited extent its repetitive metrical structure. At an early stage in the decipherment, three classicists commented on the forms which some of the words would have had in the 2nd millennium BCE and the readings were modified accordingly. One of the linguistic problems which was not referred to specialists, because the few who exist do not concern themselves with the Phaistos disk, is the postulated reduplicated Luwian participle, **pipiya(n?)*, 'great giving', suggested by the doubled sign 27, one of the best validated pictograms related to Linear B.

2. Autocorrelation analysis 'folds' the text into sections of a specific length and counts how often a particular feature (for example the equivalent signs 7 and 29 on Side B) recurs in the same position in successive folds, as a proportion of its possible total repetitions in a given section of the text. Repeating this with folds of different lengths reveals any repetitive patterns that may exist, though the procedure is more difficult when there are quasi-irregular features in the structure.

3. In the Roman transliteration of Greek, overlining distinguishes the long vowels *ō méga* and *ē̄ta* from *ò mikrón* and *è psilón*; q^u and g^u represent unvoiced and voiced labiovelars in ancient Greek.

4. *Iliad:* Murray, 1978; Book IV, 101-103, 119-121; and Book VII,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

89-90; *Atharvaveda:* AV. 6,18,2; Gonda 1959, 186.

5. Herakleion Museum Ex. 14167, *Clay figurine votive offering*, and Ex. 1898, *Hieroglyphic tablets*, Minoan OPP, 2000-1700 BCE and Bowden MS, 43, Fig. 10.

6. Etruscan bronze statue, 5th century BCE. *Mars, god of war, wearing a helmet with horse's mane and ears,* Florence Archaeological Musuem: and Bowden MS, 111, Fig. 26. Greek legend attributed the origin of their crested helmets to Caria (Bean 1971, 3), which supports a west Anatolian provenance for the Phaistos disk. The sacrificial horse-cult implications of the signs 2+12 ideogram relate to Linear B *hiq^{u}oio*, 'horse god', (Palmer) and 'horse goddess' (Bowden MS, 148, Fig. 33), as well as the horse sacrifice described in *Iliad* XXI, 132 and the likely cult basis of the Trojan Horse legend. Words A7-A9 of Section AI suggest there was a symbolic equivalence between the kingly human sacrifice and the horse, as in the Vedic sacrifice (*aśvamedha*) of a royal horse that first enlarged the king's domain by wandering abroad.

7. Room 4, Cases 4 and 24, exhibits unnumbered, from Shaft Grave V at Mycenae, 1580-1550 BCE.

8. Since two pictograms are solely logograms (signs 15 and 22) and one a grammatical suffix (sign 12), the percentage of 42 syllabograms is 43-48. But as homophony reduces the number of distinct phonemes to only 26, the effective relationship to Linear B is as high as 69-77 per cent.

9. In this estimation procedure, the six principal alliterative signs were omitted as being non-randomly over-selected in the text and were then added to the final total sign-set estimate. The sign-frequency distributions for the two sides were modelled by fitting power-functions to them, so that selections of signs simulating the two sides' texts could be made automatically by computer in sets of 60 for each point in Fig. 4, even up to theoretical sign-sets double the 45 different signs on the disk. The parameters of the power function for Side B were similar to those for Side A, but its best-fit error was 2.67 times as great ($p = .04$ per cent).

10. Chadwick, 1976, estimated 55, not allowing for homophony.

11. There are 73 per cent more acrophones than phonemes represented by them.

12. *cf.* the Arkalokhori ax text; Chapter 15, Bowden MS.

13. Greek *Maíandros* (? < **maía andrós*, 'good mother of mankind', thus named perhaps by Greek-speaking Trojans for its ancient connection with the Mother Goddess cult; *cf.* Celtic *Matrona*, 'Mother', the river Marne, France.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

14. *a.* Co-ethnolinguistic with the mainland Greeks, though some scholars dispute this; see Watkins, 1986.

b. The dolichocephalic horse pastoralists would tend to lose this trait by inter-marriage with the stockier Luwian farmers and might resort to infant head-binding to restore it as a symbol of thier social dominance. Prag, 1989, Plate XLII (*d*) shows the possible result; the reconstructed head of kind Midas of Phrygia, suggested by Prof. Berna Alpagut (*op cit*, 160-1) as owing its extreme length to head-binding. The measured proportions are almost identical to those of sign 2. Possibly Trojans in Arzawa earlier had the same cultural practice.

15. Bowden 1973, 178, for the statistical correlation between fishing and female-dominance / equidominance.

16. *a. cf.* Yakar 1976, 119 and Houwinck ten Cate 1973, 145-6.

b. At least eight names relating to Wilusa (Ilios) in the Hittite texts can be interpreted as Greek; see Bowden MS, Chapter 13; and Güterbock 1986.

17. *a.* Strictly, Freyja was a deity of death in battle; she received half of the slain warriors.

b. Re-enacting the battles of the gods to recall by sympathetic magic the rainstorms of summer must be why Balkan mid-winter combat dances are associated with the fecundity of crops and animals.

c. The two complementary aspects of Cybele were apparently reassigned to Athena (Attic Αθάνα, cogn. ἀθάνατος,'immortal') as militant patroness of Athens and goddess of feminine crafts, though not of fertility in the 'purified' classical Greek religion; and to Aphrodite at Sparta as goddess of war and fertility, her epithet Οὐρανία, 'heavenly', cogn. with 'urine', Skt *vār*, 'water', signifying the rain storms associated with her crop-fertilising function.

18. National Musuem, Athens, Ex. 2468, *Miniature sculpture in ivory: head of Mycenaean warrior with boar's-tusk helmet.* Chambered tomb, Mycenae, 14th century BCE.

19. Fig. 4. After eliminating the 9 special signs, Side A and B contain 28 and 25 distinct signs, respectively. The downwards and upwards sigmoid curves show the percentages of 60 computer-generated samples with $\leqslant$ and $\geqslant$ these two numbers, at each of a range of simulated total sign-sets up to 85. Where the curves cross is the best estimate for each side's text (excluding ideograms), plus the 6 principal alliterative syllabograms.

20. Fig. 5. Stanza A. The honorific logogram L, ʿIqʷέϝως, is assumed to be vocalised as an amphibrach, (2.S̄.12), its middle syllable S the second syllable of the acrophonic name of sign 2, 'crested head', part of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the same scheme of alliteration as signs 1, 23, 26, 27 and others listed in the article: these and other alliterative signs are overlined in columns 2, 5, 8 and 11. A dotted slash marks off 2.S̄.12 because in one case the halfline ends at that point; this does not occur in the final structure with word A31 included in the stanza rearranged to fit the semantics. Arrows indicate words continuing on the next line. Wordends are marked thus: $27^{23}/$. Asterisks show omission (catalexis) of certain syllables. In both Stanzas A and B, 13 per cent of the non-alliterative positions in the metrical structure are anomalously occupied by a p-alliterative sign (ū).

21 *a.* Fig. 6. Stanza B. The alliterative structure of 2-3-2 and 3-2-2 syllables found by serial autocorrelation analysis, transecting the 11-syllable halfline phrase structure later found; lines 4 and 3 are an inversion of lines 1 and 2. The catalexes (*) here may be metrical rather than linguistic. Contrary to the usual assumption, there is no thorn on the last sign of word B30.

b. The metricsof Stanza B and Section AI, and their apparent relation to Bulgarian folk dance, require specialist investigation, since general works on the latter (Grove; Kremenliev) show that they correspond in several respects while differing in detail. For example, the $^{7}/_{8}$ (3 + 2 + 2) measure occurs in the Bulgarian *mashka rachenitsa* and *Makedonsko horo* but more numerous Bulgarian 7-measures are (2 + 2 + 3), while the (2 + 3 + 2) and the 11-measure (2 + 3 + 2 + 2 + 2) of Stanza B apparently do not exist in Bulgaria, where $^{11}/_{16}$ rhythm generally has the triple bar either initial, medial or terminal, not asymmetric. Ancient Bulgarian ritual and religious songs are in $^{5}/_{16}$ (2 + 3), not unlike Section AI. Cross-rhythms between melody and lyric are not universal, but one example in Kremenliev has $^{7}/_{16}$ (2 + 2 + 3) melody, with lyric in (3 + 2; 3), where the second triplet has amphibrachic (◡ – ◡) stress like Stanza A. A song appealing for rain in the dry season of May - June shows the consecutive triple beats of Section BIII, $^{7}/_{16}$ (1 + 1 + 1 + $^{1}/_{2}$). *Provikvaniya*, a cry ending a verse on a rising minor seventh interval and resembling the voc. *Mater!* of Stanza B, is common in Bulgarian harvest songs, but regular alliteration, in contrast to occasional rhyming, scarcely occurs. The source of Bulgarian folk rhythms is thought to be in Dorian, Phrygian, Thracian or Hindu music, the latter correlating with the occurrence of 'empty beats' in north Indian *Kāthak* dance.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

REFERENCES

Anthony, David W. and Dorcas R. Brown
1991 The origins of horseback riding. *Antiquity,* 65 (246), 22-38.

Bean, George E.
1966 *Aegean Turkey.* London: Benn.
1971 *Turkey beyond the Maeander.* London: Benn.

Bowden, Edgar
1973 Further implications of cultural surgency and sex-dominance. *American Anthropologist,* 74(5), 1122-32.
1992 *Cybele the Axe-Goddess: Alliterative verse, Linear B relationships and cult ritual of the Phaistos disc.* Amsterdam: Gieben. A 304 page monograph, referred to as MS.

Chadwick, John
1976 *The decipherment of Linear B.* Cambridge: The University Press.

Duhoux, Yves
1977 *Le disque de Phaistos: archéologie, épigraphie (édition critique).* Louvain: Peeters.

Evans, Arthur
1909 *Scripta Minoa I.*
1921 *The palace of Minos at Knossos I.* London: Macmillan.

Gonda. J.
1959 *Stylistic repetition in the Veda.* Amsterdam: N.V. Noord-Hollandsche Uitgevers Maatschappij.

Grove
1980 *The new Grove dictionary of music and musicians.* Ed. Stanley Sadie. London: Macmillan.

Güterbock, Hans
1983 The Hittites and the Aegean world. I. The Ahhiyawa problem reconsidered. *American Journal of Archaeology,* 87: 133-143.
1986 *Proceedings: Troy and the Trojan war.* Symposium at Bryn Mawr College, Pennsylvania, October 1984, p. 42.

Houwinck tenCate, Philo H. J.
1973 Anatolian evidence for relations with the west in the LBA. *Bronze Age migrations in the Aegean.* Ed. R. A. Crosland and A. Birchall. London.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Kremenliev, B.
1952 *Bulgarian - Macedonian folk music.* Berkeley / Los Angeles: The University of California Press.
Mellink, Machteld J.
1964 Lycian wooden huts and sign 24 on the Phaistos disc. *Kadmos*, 3:1-7.
Murray, A.T.
1978 *Homer: The Iliad.* London: William Heinemann.
Olivier, J-R.
1975 *Le disque de Phaistos (édition photographique).* Athens: Ecole Française.
Palmer, L. R.
1963 *The interpretation of Mycenaean Greek texts.* Oxford: The University Press.
Pernier, Louis
1908 Il disco di Phaestos con caratteri pittografici. *Ausonia*, 3:255-302.
Prag. A. J. N. W.
1989 Reconstructing King Midas: a first report. *Anatolian Studies*, XXXIX, 159-165.
Schürr, Diether
1973 Der Diskos von Phaistos und Linear A. *Kadmos*, 12:6-19.
Schwartz, Benjamin
1959 The Phaistos disk. *Journal of Near Eastern Studies*, 18(2):105-112, 222-228.
Stubbings, Frank H.
1972 Chapter 14. The rise of Mycenaean civilization. *Cambridge Ancient History II(1).* Cambridge: The University Press.
Ventris, Michael and John Chadwick
1973 *Documents in Mycenaean Greek.* 2nd edn., J. Chadwick. Cambridge: The University Press.
Watkins, Calvert
1986 The language of the Trojans. *Proceedings: Troy and the Trojan war.* Symposium at Bryn Mawr College, Pennsylvania, October 1984.
Yakar, Jak
1976 Hittite involvement in western Anatolia. *Anatolian Studies*, XXVI, 117-128.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

BOOK REVIEWS

The Cohesion of Oppression:
Clientship and Ethnicity in Rwanda 1860-1960
Catherine Newbury
Columbia University Press

Catherine Newbury has written a somewhat Marxist-inspired analysis of genocide and violent social change in Rwanda which nevertheless comprises a useful record of events and which reveals the disturbing impact of Westernization on the traditional balance of Rwanda society.

While Newbury sees the subject of her study in terms of the impact of "colonialism" and "post-colonial" revolution, and approaches the subject essentially in terms of class warfare between the ruling Tuutsis and the more numerous Hutu, she points to the significance of the kinship structure which prevailed in pre-colonial Rwanda. This defined the limits within which all previous economic activities were delineated. She then proceeds to trace what happens when "modernization" in the form of changing economic structure disturbs and interacts with a long established social system. The book then traces the events which led to violent revolution and genocide against the ruling Tuutsis by the majority Hutu.

The Cohesion of Oppression is an interesting and informative book with an inappropriate title. It describes the precolonial structure of Rwanda and the impact of colonialism, of Christian missions and Western-style economic development— factors which disrupted what had been a moving status quo.

Adopting what the publisher calls a "view from below," Newbury explores the interaction of central and local power bases in Rwanda, delineating the impact of German and Belgian policies which sought to utilize the existing social and political structure as the basis of colonial rule, deliberately avoiding interference in the established pattern of Rwanda society. However, as Newbury shows, the establishment of missionary stations and the introduc-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tion of factories paying attractive wages put pressures on the traditional social and economic structure which created causal conditions that made violent revolution by the Hutu virtually inevitable once the decision to withdraw the politically stabilizing influence of colonial rule was taken. In many ways the experience of Rwanda throws a clear light on parallel developments in other African countries wherever the traditional pattern of social and economic order was disrupted by even small scale industrialization and "modernization."

Indeed, in Rwanda, as colonial resolve weakened, the social changes already created by even a partial modernization of the economy and by the introduction of elementary education and concepts associated with Christian missionary ideology meant that in the three years leading to Rwandan independence social tensions increased. Eventually an extremely violent Hutu uprising resulted in the abolition of the monarchy amid wide-scale genocide against the ruling Tuutsi ethnic group. Rival Hutu leaders established a presidential regime with an essentially Hutu elective assembly. In short, Rwanda burst into outright race war, as has happened in so many other post-colonial African states.

Surveying a hundred years of Rwandan history, Newbury shows how class formation, ethnic identity, patron-client relations, and mechanisms of control were shaped by, and in turn influenced, the colonial state. She draws on a vast array of oral data and historic accounts, reassessing the extent of political, cultural and economic change in colonial Rwanda. Her new interpretation of the Hutu revolution's preconditions carries implications for understanding the impact of colonial rule on sub-Saharan Africa and the disarray throughout that area in the post-colonial period.

The author comments that before attempting to explain the significance of her focus on the role of ethnicity, patron-client relations, and the impact of colonial efforts to convert Rwanda into a nation-state. In doing this she sought to show how and why earlier studies had distorted or neglected these elements. She consequently focuses on the patron-client relations because of its importance to understanding the history of Rwandan society.

The prevailing view of Rwandan political organization arose, she claims, from the efforts of social scientists to explain how stable social relations were possible in Rwanda society despite the political

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

domination of the majority population at large (comprising indigenous Negroid Hutu agriculturalists) by a partially more Caucasoid, Tuutsi population of pastoralist overlords. As is so often the case, herding populations can be more warlike, and have historically often imposed themselves as an aristocracy over indigenous agriculturalists, offering the latter protection in a patron-client quasi-feudal relationship:

> According to the most reliable colonial census available, that of 1960s, the subject Hutu constituted about 83 percent of Rwanda's population in that year; Tuutsi, only 16 percent; and a third group, the Twa, about 1 percent. Yet virtually all positions of power and prestige were held by Tuutsi, and cattle (one of the major forms of wealth, whose transfer served as an important representation of social relations), were predominantly owned by, or their transfer controlled by, Tuutsi ...
>
> In the 1954 study by Jacques-Jean Maquet ("Le systeme des relations sociales dans le Rwanda ancien"), Maquet relied on the concept of "caste" to characterize what she saw as the rigid separation between the three principal groups and the hierarchical unchanging character of relations between them. In this presentation, Maquet argued that social stability was supported by a community-accepted "premise of inequality" that all Rwandans are by birth fundamentally unequal. Such value consensus implied an acceptance on the part of the dominated that some (in this case the Tuutsi) are born to rule, while others (the Hutu and Twa) were born to obey and to serve.
>
> In Maquet's view, functional integration in such a society resulted from the patron-client institution, whereby Tuutsi pastoralist patrons granted the use of cattle to particular Hutu who were their clients. The Tuutsi had introduced and effectively controlled the use and distribution of cattle, and cattle clientship represented the loan of cattle to Hutu cultivators with both access to cattle and juridical protection since a patron was expected to protect his client. According to Maquet, this institution incorporated all Rwandans within a dense network of reciprocal ties. Through it, she argues,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

clientship provided a status for the Hutu within the hierarchical system. Even the Tuutsi who were patrons to Hutu clients were themselves clients to more powerful Tuutsi; in theory the only person ultimately not a client in this system was the king himself.

Thus the Rwandan state was in many ways analogous to the proto-feudal system established by the incoming cattle-owning Celts over the indigenous pre-Celtic population of ancient Ireland. It was organized administratively so that there existed built-in competition between local authorities who were actually competing as "political" appointees of the king, and this situation gave Hutu opportunities to utilize alternative channels of appeal in cases of grievance.

Maquet expected that only external influences could disturb the Rwandan "equilibrium." And this is what happened, for although the colonial authorities did not attempt to disturb the prevailing pattern of Tuutsi-Hutu relations, they effectively did this by allowing missionaries to spread Western ideas and entrepreneurs to start a system of wage-paying primitive industry. Thence forward the Hutu had a means to free themselves from their traditional patron-client dependency. Peaceful co-existence, based upon ethnic inequality, was replaced by hatred, which exploded into genocide during the 1959-1961 genocidal uprising, which was far more bloody than the French Revolution, and more closely resembled the Haitian massacre of the French ruling class in that unfortunate country.

Author Newbury claims that:

> Attempts to explain this violence have varied in the emphasis they place on class or ethnicity ... Maquet's (and others') portrayal of precolonial Rwanda assume that ethnic groups in Rwanda were primordial and the stratification between them was static and unchanging. They also assume that ethnic stratification was changed but little during colonial rule ... In accounting for the radical political transformations of the terminal colonial period, such analyses then place great stress on external developments, but she herself reveals that these changes occurred in the context of, and interacted with,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

alterations in the social relations of production. Transformations in state power, clientship relations, and labor control mechanisms helped to create the social preconditions to revolution, by contributing to a heightened political consciousness and solidarity among Hutu.

Self-conscious ethnic or racial identity among the Tuutsi predated European colonialism. The Tuutsi court possessed a rich oral literature with a highly developed ritual which served as effective catalysts in the maintenance of Tuutsi identity. Newbury comments that "these were perhaps more effective in some ways than writing because of the participatory aspects of oral recitations and ritual and because such oral presentations could adapt to changing circumstances and perceptions. During the colonial period, Tuutsi self-awareness was further enhanced and articulated in the writings of educated Tuutsi." Since writing was a skill limited to a relatively small number of Rwandans — many of them Tuutsi — the fact of literacy, as well as the content of the written work, became an important element as both implement and symbol of class differences and hence of Tuutsi elite identification."

Newbury is correct in observing that patron-client relationships, like any other economic or social system, will work only when a mutual trust is established between the patron and the client. Virtually any system will work when based on goodwill. Unfortunately too many factors exist which can destroy goodwill and disrupt relations between individuals and ethnic groups. Hierarchical relationships are not in themselves inherently evil: indeed, they are natural where disparities exist in innate ability or in technology. But rapid or radical economic change and the challenge of new and alien ideologies can disrupt any established socio-political system however well-attuned it may be to past conditions. Change has to come slowly to avoid violent disruptive and revolutionary expression.

Newbury traces the emergence of political organization among the Hutu during colonial rule in some detail. The long term success of the patron-client relationship had restricted Hutu concepts of identity to the more immediate kinship or lineage unit. Hutu consciousness was stimulated by foreign contacts.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> Hutu self-identity was heightened by the perception of viable ideological alternatives to the patron-client system, and the ability to earn income from the new, if elementary, European manufacturing enterprises independent of the traditional system were elements to be considered. Much of this new awareness arose around Kinyaga. Here the Hutu kinship system had been more heavily eroded by the growth of the Tuutsi-dominated patron-client relationship, and here and in nearby Kivu the Hutu had most contact with European alternatives.

Newbury tells us that ethnic differences were most sharply drawn in central Rwanda, where Tuutsi domination was longest established. It was there, however, as in Kinyaga, that economic change involving cash crop production provided the basis for Hutu revolt, prompted also by external ideological influences arising from missionary Catholic influences under European colonial rule. The Catholic Church played a key role through providing the Hutu with schools, publications, and employment, which created a part educated Hutu elite who were to attain high status with the overthrow of the Tuutsis by violent revolution.

Newbury blames the European colonial governments for being content to rule through the local system they found in place when they arrived, merely interfering to prevent extreme brutality, inter-tribal bloodshed and to suppress those customs which were too highly offensive to European morality. Considering the small number of European administrators involved in maintaining order, a policy of minimal interference was probably the only practicable choice available to them; besides, a policy of minimal-interference had an appeal as an ethically-acceptable solution. But the technological, economic and cultural change introduced to Africa by contact with the rapidly evolving technology and economy of the outside world was to do its work regardless of any moral goals the colonial rulers might have set: Africa was so economically and socially different from the world around it that "modernization" was bound to create even greater disruption than it has brought into being in contemporary Western society.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A Question of Intelligence
Daniel Seligman
Birch Lane Press, 1992; 239pp.

On February 28, 1969, the *Harvard Educational Review* published one of the most controversial articles of contemporary scholarship. "How Much Can We Boost IQ and Scholastic Achievement?" by Arthur Jensen caused quite a stir for arguing that individual and group differences in intelligence are due primarily to heredity. Since then Jensen has endured classroom disruptions, death threats, canceled symposia speeches, suspended research projects and legal hurdles in testing California school children. Nonetheless, as a leading authority in his field, he has weathered one of the stormiest careers in academe.

As *Fortune* columnist Daniel Seligman points out, advocates of the Great Society still think of Jensen as "the skunk at the garden party". Researchers have conducted several extensive studies on intelligence since Jensen's 1969 paper and the ranks of the skunks have grown. These findings are reviewed in his book *A Question of Intelligence: The IQ Debate in America*. While assessing the technical literature, Seligman noticed a peculiar trend in the news coverage of IQ testing. What often passes in the media as a scholarly "debate" over intelligence is essentially a false dichotomy and reflects upon the interpretive biases that are inherent in the media.

This layman's guide on intelligence has its own turbulent history. A few years ago Seligman received a generous advance from Whittle Communications, the intended publisher of the manuscript. Shortly before the book went to press, Chris Whittle decided that the text was too "controversial" to publish. As a result of Whittle's last minute cold feet, Seligman ended up with the hefty advance and a well-written manuscript that was rejected for being politically incorrect.

Seligman's candid approach to this topic makes his work controversial. Various taboos associated with IQ testing are redressed: the reliability of testing data for educational and employment selection, the question of cultural bias, heritability, socio-economic disparities, and gender and racial differences in IQ levels. While plodding carefully through this minefield of explo-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sive issues, Seligman gets to the bottom line while omitting the technical jargon. The scientific findings are presented in a matter-of-fact style without compromising on accuracy.

It may surprise the typical reader that a majority of testing experts have reached a consensus on several IQ related issues: First, more experts agree than disagree on what "intelligence" is; Second, that IQ tests effectively measure what is considered to be "intelligence;" Third, "test bias" can be reasonably minimized and the testing data predict equally well for different ethnic groups; Fourth, both heredity and environment have an impact on intelligence.

Seligman introduces the reader to one of the largest ongoing twin research programs: The Minnesota Center for Twin and Adoption Research. Under the guidance of Thomas J. Bouchard, Jr., a team of behavioral scientists at the University of Minnesota are pinpointing environmental and hereditary influences on human behavior by studying identical and fraternal twins. Twin studies show that the similarities in twin personalities, IQ level, habits and hobbies are more tangible than mere upbringing. These similarities often remain even though some identical twins were raised in separate environments.

Recent behavioral genetic studies reveal some unintended twists in how researchers now view the input of heredity and environment on the development of intelligence and personality. The prenatal environment is considered to be more important than what was originally believed while genetics may play a more prominent role later in life. The specifics of how environmental variables determine behavior still remain a greater mystery to behavior geneticists than the influence of genetics.

Although a degree of consensus exists over the basics, scholars remain divided over a few unresolved crucial areas. Here Seligman delves briefly into the pros and cons of "street smarts" or practical intelligence, whether or not IQs are basically unified or divided into various independent abilities and if intelligence levels are on the rise or decline.

The concept of general mental ability, identified as simply 'g' by the eminent British psychologist Charles Spearman, has returned to the forefront of contemporary research. Scholars like Jensen who stress the importance of 'g' (general ability) continue

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to notice its presence in a variety of demanding skills that involve a given level of abstract reasoning. Lately, Jensen has focused upon the relationship between g and "reaction time". Reaction time is a speed measurement for an elementary task.

Seligman devotes a chapter to the bizarre twist in the Cyril Burt controversy. Burt, an eminent British psychologist who died in 1971, was accused of faking twin data that bolstered the hereditarian view of intelligence. Several damaging allegations that were "substantiated" in an authorized biography convinced many of Burt's misconduct. Most of what was thought to be an open and shut case went up in smoke with the findings of two painstakingly thorough studies. Both authors strip away the charges of fraud by showing that the allegations against Burt are tenuous.

Seligman ventures into the area of eugenics by pointing to the potential eugenic windfall of the Human Genome Project. He applauds the impressive results of the Repository for Germinal Choice (RGC) -- a high IQ sperm bank that helped to bring about 150 bright 'brave new kids.' Successful programs like the RGC could enable healthy societies to reproduce future generations of gifted individuals, thus offsetting the negative consequences of a differential birth rate. In pointing to the track record of misapplied eugenic measures, Seligman realizes the public's reluctance to consider expanding such a program.

Critics of IQ tests often point out that other traits and human characteristics are as important as a sound IQ. Compassion, tolerance and understanding, some say, are necessary human attributes that are equally as important as intelligence. Others, like Rabbi Avi Shafran of the New England Academy of Torah, believe that the persistent racial differences which the data reveal have no significance. Shafran writes of Seligman's book, "What is troubling, what bothers me, at least, is ... so what?"

The negative consequences of dodging the uneasy issues that surround IQ data clearly outstrip any benefits that emerge from abandoning IQ research. Before disregarding the broader meaning of the testing data, fair-minded observers should consider what the distinguished psychologist Raymond B. Cattell wrote in 1987:

> There is really no conflict between humanitarian goals and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> the aim of fostering high intelligence. The suggestion that the low intelligence individuals will be neglected has been simply a rationalization for doing nothing in the field of eugenic exploration. The reformer is as sensitive as any to the worth and dignity of every individual, regardless of gifts. But the greatest happiness of the greatest number, even in the lower ranges of intelligence, demands a birth rate adjusted to competence.

Seligman's arguments have policy implications for the present administration. Liberal policy advocates, like educational reformer Jonathan Kozol and Economist Lester Thurow, argue for more government "investment," namely, increased funding for public schools, plant modernization and employee training. Kozol believes that more funding for Head Start and resource parity for inner city schools will help reduce the existing inequalities of our public educational system. Thurow wants us to modernize our industrial and manufacturing base by following the successful economic policies of the pacific rim.

The fallacy of their reasoning is essentially a misdiagnosis of the problem. The blind spot of many liberal advocates is in assuming that human inequalities directly flow from a neglected funding of government programs. As Dwight J. Ingle once wrote, "Lack of water is not the cause of fire."

For several years these same reformers continued to dismiss the social implications of the testing data, which Seligman puts squarely:

> The single most important reason for hostility to IQ testing in America today is the country's commitment to the idea of equality. For all their utility and explanatory power, IQ scores insistently convey a message that egalitarian America does not want to hear. The message: that people are unequal in mental ability.

Perhaps this explains, as Jensen once argued, why the boosts from Head Start programs continue to be short terms gains. It may also help explain the successful competitive performance of Asian nations.

Kevin Lamb

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Decline and Fall of the Freudian Empire

Hans J. Eysenck
University of London & Maudsley Hospital, London

Clothbound 192 pages

CONTENTS

Freud the Man
Psychoanalysis as a Method of Treatment
Psychoanalytic Treatment and its Alternatives
Freud and the Development of the Child
The Interpretation of Dreams and the Psychopathology of Everyday Life
The Experimental Study of Freudian Concepts
Psycho-babble and Pseudo-history
Rest in Peace: An Evaluation

The author, who is the world's most frequently cited psychologist, argues that Freudian psychoanalysis is largely imaginative, lacks experimental justification, and is lacking in any claim to scientific authenticity.

ISBN 1-87465-01-5
Price $25.00
MASTERCARD AND VISA ACCEPTED

SCOTT-TOWNSEND PUBLISHERS
P.O. Box 34070
N.W. Washington D.C. 20043
Tel: (703) 442.8010. Fax: (703) 847-9524

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

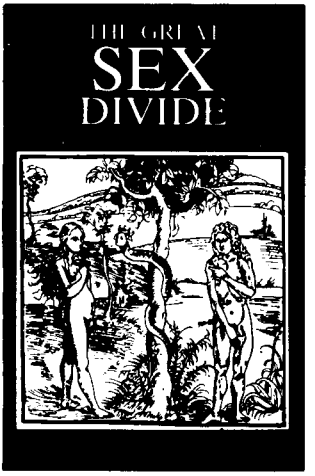
The Great Sex Divide

Glenn Wilson

Institute of Psychiatry, University of London

CONTENTS

Sex and Evolution
Evidence from Human Biology
Evidence from Animal and Other Cultures
Can the Differences be Suppressed?
Sexual Anomalies and Difficulties
Talent and Achievement
Aggression and Crime
Social Forces and the Sex War



The author, an eminent psychologist, examines the accumulated evidence for innate psychological differences between men and women which reveal the false assumptions on which much feminist literature is based.

ISBN 1-878465-04-X
Paperback, 160 pages
Bibliographical References and Index
Price: $15.00

Scott-Townsend Publishers
P.O. Box 34070
N.W. Washington, D.C. 20043
Tel: (703) 442-8010 Fax: (703) 847-9524

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED